

January 2007

FROZEN ASSETS

Rethinking Teacher Contracts Could Free Billions for School Reform

By **Marguerite Roza**

ACKNOWLEDGEMENTS

The Joyce Foundation provided funding for this report. The findings and conclusions are those of the author alone, and do not necessarily represent the opinions of the foundation.

ABOUT THE AUTHOR

MARGUERITE ROZA is research assistant professor at the University of Washington's Center on Reinventing Public Education and an Education Sector nonresident senior fellow.

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Education Sector is an independent education policy think tank devoted to developing innovative solutions to the nation's most pressing educational problems. We are nonprofit and nonpartisan, both a dependable source of sound thinking on policy and an honest broker of evidence in key education debates throughout the United States.

State and federal accountability systems are putting immense pressure on public schools to improve the performance of low-achieving students. To respond, schools must be able to recruit and retain high-quality teachers, strengthen curricula, and take other steps to provide struggling students with the help they need.

But such efforts are expensive and, as the nation faces the cost of caring for an aging population and other challenges in the years ahead, it is unlikely that education will receive a great deal of new funding. Education leaders, as a result, will increasingly have to scrutinize their existing budgets to find ways to fund their reform initiatives. One potentially valuable source of funds for reform are common provisions in teacher contracts that obligate schools to spend large amounts of money on programs that lack a clear link to student achievement.

Education is a labor-intensive business—an estimated 60 percent to 80 percent of the more than \$500 billion per year spent operating the nation’s public schools goes directly to paying and supporting school employees, and teacher contracts play a big role in determining where such resources are deployed. Much of the money is directed to basic salary costs. But many common provisions of teacher contracts require school districts to spend substantial sums to implement policies which research has shown have a weak or inconsistent relationship with student learning.

This report examines eight such provisions:

- Increases in teacher salaries based on years of experience;
- Increases in teacher salaries based on educational credentials and experiences;
- Professional development days;
- Number of paid sick and personal days;
- Class-size limitations;
- Use of teachers’ aides;
- Generous health and insurance benefits; and
- Generous retirement benefits.

The report estimates the total spending on these provisions in public education, examines studies on the

provisions’ effects on student achievement, and explores how these “frozen assets” might be put to different use. Our analysis estimates that an average of 19 percent of every school district’s budget is locked up by these eight provisions. That translates to roughly \$77 billion in annual public school spending nationally.

This is not excess money that could be withdrawn from the public education system with no impact on student learning, but rather money that might be spent differently and with greater effect. Some schools and school districts, particularly those that serve disadvantaged students, are likely to require significant increases in total funding in order to improve their performance. But with such monies in short supply it surely makes sense to put existing resources to the best possible use.

Money spent on seniority-based raises and generous health plans for more veteran teachers might be better used for raising minimum salaries to recruit younger educators who meet high teaching standards. Resources spent meeting mandatory class-size targets or hiring a prescribed number of classroom aides might be better used to hire teachers to provide after-school tutoring to low-performing children. Teacher contracts often deny school leaders the flexibility to make such trade-offs in the eight key areas the report examines.

Teachers also pay a price for the rigidity of the provisions, at least indirectly. Restricting resources that could be better used elsewhere diminishes the quality of schools and, as such, the professional lives of teachers. Conversely, teachers as well as students would benefit if resources were used more effectively.

It is important to note that teachers unions are not solely responsible for contract provisions that contribute little to student achievement. Every teacher contract requires two

signatures, one from labor and one from management, a fact that is sometimes lost in debates about the impact of unions on public schools.

Another indication that school administrators bear responsibility for many unquestioned expenditures is the fact that many of the policies and practices mandated by collective-bargaining contracts also exist in states and school districts where teachers do not have collective-bargaining rights. For instance, salary schedules in states without collective bargaining compensate teachers for longevity and education levels in much the same way that salary schedules specified by labor contracts do.¹

The Methodology

Teacher contract provisions vary significantly in the nation's 15,000 school districts; provisions found in some are absent from others. This report examines eight provisions that academic literature and knowledgeable researchers suggest are common in collective-bargaining contracts. The report also found these same provisions in a significant number of contracts. The report, however, examines only those provisions that research suggests have a weak or inconsistent relationship with student learning.

The cost of contract provisions at the local level depends on per-pupil spending, which varies widely among districts. There is no single, national repository of teacher-contract provisions governing spending and labor policy that would allow researchers to define precise criteria for identifying "typical" requirements. Estimates of the cost of teacher contracts vary greatly depending on the methodology used. The Pacific Research Institute, a conservative think tank, released a study in 2002 estimating that 85 percent of district expenditures are tied to collective-bargaining contracts. In contrast, the National Education Association, the nation's largest teachers union, has claimed that classroom teacher salaries make up only one-third of district budgets.

This report estimates only the difference between necessary organizational expenditures and those additional expenditures that if not for contract provisions, could be used differently. So, for example, not every dollar spent on salaries is calculated, but rather only those expenditures associated with mandated salary bonuses

associated with experience and education degrees. In some cases, the report identifies policies and programs that many school systems reasonably could be expected to pursue, such as teacher training and class-size reductions, but that research suggests could have greater effect on school quality if school leaders had greater flexibility in implementing the policies than most teacher contracts afford.

The report's cost estimates are based on the latest available average levels of per-pupil spending and teacher compensation in larger urban districts. It estimates the cost of employee benefits like health care and retirement benefits by looking at the cost differences between typical teacher benefits and the benefits enjoyed by the average worker in the private sector. Estimates for policies like class-size reduction and hiring of teacher's aides also are conservative, attributing only a fraction of the likely total cost of the policies to contract provisions. For teacher professional development, only costs associated with mandatory days of paid training are included.

The report does not consider costs for other typical contract provisions for which data is unavailable, such as salary increases earned for educational credits beyond a graduate degree.

The Results

This analysis found that each of the eight contract provisions has a significant impact on school-district bottom lines. Not surprisingly, the most costly provisions relate to the way teachers are paid.

1. Increases in Teacher Salaries Based on Years of Experience: Virtually every teacher contract in the nation dictates that teacher salaries be tied to years of service in the classroom. Seniority is a bedrock principle of the industrial unionism from which today's teachers unions sprang. It represents the single most expensive teacher-contract provision.

But while salaries for teachers typically increase throughout their careers, research suggests that teacher effectiveness in the classroom does not increase on a similar trajectory. Studies show that individual teachers are less effective in their first year of teaching than later in their careers, but improvement tends to plateau after

only five years or so, and may even *decline* as teachers approach retirement.² Moreover, research suggests that while teachers with some experience are almost always more effective than they were as novice teachers, some beginning teachers are more effective than some veteran teachers.³ This means that teacher contracts obligate school districts to give many more senior teachers additional salary with no commensurate increased benefits for students in return, as opposed to rewarding teachers who are particularly effective. This is not to say that teachers should not be rewarded for experience, but that there may be more productive ways of structuring salaries.

To calculate the cost of these provisions, the report relies on data from a variety of sources. According to the Schools and Staffing Survey (SASS), a survey of teachers and teacher policies periodically conducted by the U.S. Department of Education, the average teacher in a central city earned \$45,400 during the 2003–04 school year.⁴ The American Federation of Teachers (AFT), the nation’s second-largest teachers union, reports that the average teacher has 14.8 years of experience.⁵ SASS data indicate that the average teacher receives a salary increase of 2.58 percent for each year of experience. It should be noted that this increase is above and beyond cost-of-living increases.

Table 1 shows these costs in per-pupil terms. The amount was found by calculating the difference between the average teacher salary (minus increases for master’s degrees, as described below) and the amount the average teacher *would* have been paid if they had received no salary increases for experience. That amount, \$12,083, is then divided by the SASS-reported average of 14.56 students per teacher nationwide. This yields an average per-student cost of \$830 for experience-based salary

Table 1. Cost of Teacher Salary Increments Based on Years of Experience

Average teachers salary (not including benefits)*	\$45,400
Average number of pupils per teacher employed*	14.56
Average salary increment per year of experience*	2.58%
Average years of experience	14.8
Cost per pupil of salary for years of experience	\$829.88
Portion of expenditures attributed to years of experience	10.01%

*NCES 2003–04 figures for large/urban districts.

increases. Since the national average per-student spending level in 2003–04 was \$8,287,⁶ this means that experience-based salary increases account for about 10 percent of all school spending. (The specific calculations used for these and subsequent cost estimates can be found in Appendix 1).

2. Increases in Teacher Salaries Based on Educational Credentials and Experiences: In addition to longevity, nearly all teachers get additional salary for earning advanced educational credentials, as well as for participating in approved educational and “professional development” activities. But the evidence suggests that, like salary increases for veteran teachers, these contract provisions mandate expenditures that don’t yield additional student learning. Some studies have found that while master’s degrees in math and science are beneficial for math and science teachers, master’s degrees in other disciplines yield little measurable effects in terms of increased student learning.⁷ Yet typical teacher contracts provide additional salary for all master’s degrees, regardless of subject. Other studies show no link between master’s degrees and classroom effectiveness at all.⁸

As Table 2 shows, SASS data indicate that 48.7 percent of teachers have at least a master’s degree, and that the average salary increment for master’s degrees is \$5,200. This translates into total costs of \$173 per student, or 2.1 percent of school budgets.

Table 2. Cost of Salary Increases for Master’s Degrees

Average salary increment for a master’s degree	\$5,200
Average portion of teachers with a master’s or above	48.70%
Cost per pupil of salary increases for master’s degrees	\$173.93
Portion of expenditures attributed to salary increases for master’s degrees	2.10%

It should be noted that this estimate likely understates the true cost of salary increases based on educational credentials and experiences, because it does not account for salary increases for obtaining a doctoral degree, which 8.2 percent of teachers have earned, or salary based on additional educational credits short of a degree, which many teachers receive.⁹

3. Professional Development Days: Nearly all policymakers and educators agree on the importance of giving teachers opportunities for education and training once they are in the classroom. But the training provided is often of questionable quality. As a Consortium for Policy Research in Education policy brief summarized, “There is a growing body of opinion among ‘experts’ that the conventional forms of professional development are virtually a waste of time.”¹⁰

There is some consensus on what high-quality professional development should entail. Among other things, it should be based in the schools where teachers teach, it should give teachers the chance to try out new strategies in real classroom settings, it should include ongoing support after initial training, and it should be evaluated to ensure that it increases student learning.¹¹

The uneven nature of teacher professional development is partially a function of the way teacher contracts require that training to occur. Most teacher contracts specify that teachers must have professional development opportunities for a certain number of days each year. Teachers are paid extra for these days, which are added to the number of days (usually specified in state law) in which students are taught.

Yet in many districts, teacher contracts make these strategies difficult or impossible to implement. Most contracts require that professional development activities occur in discrete, set-aside full or half days, precluding districts from offering programs of ongoing support in smaller units of time. Many contracts also specify professional development tailored to job categories (e.g., separate training for librarians and bilingual education teachers). Because these tend to pull teachers from various schools together into one off-site location, they reduce the time available for professional development programs based within individual schools. Teachers and students would likely benefit if the funds used to pay for mandatory professional development days were used for more effective professional development practices.

While local teacher contracts vary, the NEA has reported that the median number of paid professional development days for classroom teachers is five.¹² In a typical state, that amount would be added to 180 days of instruction. As

Table 3 shows, this translates into additional annual costs of \$84 per student, or 1.02 percent of school budgets.

Table 3. Cost of Paid Professional Development Days

Average teacher salary per day	\$245
Typical number of teaching days per year	180
Median number of paid professional development days*	5
Cost per pupil of teacher salary for 5 contracted professional development days	\$84.27
Portion of expenditures attributed to teacher salary cost for 4.5 days***	1.02%

*“The Status of the American Public School Teacher”, National Education Association, 2001.

4. Number of Paid Sick and Personal Days: Employee absenteeism is a particular concern for K–12 schools. Unlike many professional occupations, a teacher’s work can’t simply be set aside for a day if she or he is too sick to come to school, or simply wants to take the day off. Substitute teachers can be a poor substitute for the real thing.¹³

Teachers, compared to other professionals, get a relatively generous number of sick and personal days as mandated by teacher contracts and use more sick days than average. As researcher Michael Podgursky has noted:

According to a recent U.S. Department of Education survey, during the 1999–2000 school year, 5.2 percent of teachers were absent on any given day on average. That translates into 9.4 days out of a 180-day school year. During the 2000–01 school year in New York City, the annual rate of absences reached 11.3 days per teacher. These rates are much higher than in other executive or professional employment.¹⁴

Podgursky’s research suggests that if teachers took sick leave at the same rate as other professional employees, they would take only 3.06 days per 180-day school year. Assuming that substitute teachers cost \$100 per day, Table 4 indicates that the difference between 3.06 sick days and the 9.36 days that teachers actually take translates into annual costs of \$43 per student, or .52 percent of school budgets.

Table 4. Incremental Cost of Higher Rates of Sick/Personal Days Than in Other Professions

Average number of teacher sick/personal absences per 180 days taken for teachers*	9.36
Average number of sick/personal days per 180 days taken for professionals*	3.06
Cost of a substitute teacher per day**	\$100
Cost per pupil of substitutes to cover difference in sick days taken by teachers and other professionals	\$43.27
Portion of expenditures for substitutes to cover difference in sick days taken	.52%

*Computed from figures reported by Podgursky (2003), which cites Bureau of Labor Statistics as the original source.

**Averages taken from a sampling of five urban districts' contracts.

5. Class-Size Limitations: Class-size limitations have been a popular school reform strategy in recent years. The federal government and a number of state governments have appropriated extra funds to lower class sizes, while ballot initiatives in states including California and Florida have mandated maximum class sizes for all schools. These initiatives have been mirrored in a significant number of teacher contracts requiring some form of class-size reduction. But school- or school-system-wide class-size reductions are expensive and it's not clear that they produce results sufficient to justify their high cost.

Research has found that students can benefit from small classes, but the evidence suggests that class-size limitations are most effective when they target younger and disadvantaged students, and when they result in significant reductions in class size.¹⁵ Teacher contract provisions that apply to a broad range of students, or that produce only modest reductions in class size, have not had much effect.

Some contracts specify a limited size for all classes, or different minimum class sizes for different grades.¹⁶ Some limit class sizes for specific groups of students, like students with disabilities or English language learners.¹⁷ Others limit the number of students that a teacher can teach in a given term. Such mandates make it difficult for local school leaders to create the best mix of class sizes. The exact number of contracts with some form of class-size-reduction provision is unknown. A report from the Mackinac Center for Public Policy, a think

tank that promotes free-market policies, suggests that more than a third of Michigan's collective-bargaining agreements dictate lower class sizes.¹⁸ Large school districts with class-size-reduction provisions in their teacher contracts include Boston and New York City, and others like Seattle have limits on class sizes for certain types of students.

A number of factors must be taken into account to calculate the true additional cost of provisions to reduce class sizes. A study by WestEd, an independent education research organization, identified 14 such factors.¹⁹ They include the typical class size before implementation of class-size reduction, the cost of new teachers hired to reduce class size (new teachers may not cost the same as existing teachers), and the cost of building more classrooms. Unfortunately, this information is not available for all districts. The same study found that California's class-size-reduction initiative imposed costs ranging from \$0 to \$1,000 per student.

This analysis uses a conservative estimate of the typical class-size-reduction policy because there are different types of contract-based class-reduction policies, and the exact percentage of contracts with such policies is unknown. Costs are calculated based on a 5-percent reduction in class size, which would, for example, reduce the number of students in a class from 30 to 28.5. Many contract provisions mandate significantly larger reductions. The estimate also is based on only the direct costs of adding teachers, and does not include indirect costs such as building new classrooms.

As Table 5 shows, such a policy would translate into annual costs of \$187 per student, or 2.26 percent of school budgets.

Table 5. Cost of Class-Size-Reduction Policies

Teacher salary cost (including benefits) per pupil*	\$3,747.99
Per pupil cost (teacher costs only) of policies that reduced class size by 5%	\$187.40
Portion of expenditures attributed to costs of reduced class sizes by 5% (e.g. reducing average class size from 30 to 28.5)	2.26%

*Assumes a loading rate of 20.2 percent. For the source of benefit data, see M. Podgursky, "Is There a Qualified Teacher Shortage," *Education Next*, 2006.

6. Mandatory Use of Teachers' Aides: A significant number of teacher contracts require that districts hire aides to assist teachers in their classroom duties. As with provisions that reduce class sizes, these policies vary from district to district. Some contracts require that a certain number of aides be hired per classroom, school, or certain type of student, such as English language learners. Some specify that teachers are not required to supervise students during non-academic times (such as lunch or recess), thus requiring aides to be hired for supervision during these periods. Others require aides for class sizes above a certain threshold.

Teachers and parents often support the hiring of aides, claiming that they lighten the workload, help maintain order in the classroom, and allow for more individualized attention to students. But as with many of the typical contract provisions described in this report, the research suggests that money spent on teachers' aides does not yield increased student learning.²⁰

SASS data indicate that urban school districts employ an average of one aide for every 61 students. The NEA reports that the average salary of a teacher's aide is \$18,052. It is likely that most districts require some number of teacher's aides for various purposes. Therefore, the entire cost of hiring aides should not be attributed to teacher contracts. This analysis conservatively assumes that teacher contracts increase the number of aides hired by 25 percent above and beyond the number that would be hired otherwise.

As Table 6 shows, the annual cost for 25 percent more aides is \$74 per student, or .89 percent of school budgets.

7. Above-Average Health and Insurance Benefits: Many school districts face significant financial challenges in providing health benefits for their employees. Some are facing bankruptcy as a result of their health-care obligations.²¹ But while many employers are experiencing

Table 6. Cost of Provisions that Necessitate Increased Use of Teachers' Aides

Average aide salary	\$18,052
Number of students per aide	61
Per pupil cost (aide salary only) of provisions that necessitate 25% more aides	\$73.98
Portion of expenditures attributed to costs of increased aides by 25%	.89%

financial stress due to the soaring cost of health care, the cost to school districts is exacerbated by the fact that teachers, on average, receive unusually generous health benefits. Teachers, like all people, need health insurance, so it would be unreasonable to attribute the entire cost of health benefits to teacher contracts. This analysis calculates the difference between the benefits enjoyed by teachers and the benefits enjoyed by professional workers in the private sector.

As Michael Podgursky has noted:

According to recently released Department of Labor data, insurance (primarily health insurance) and retirement contributions are a substantially larger percentage of total compensation for teachers compared with professional employees in private-sector employment.²²

Based on data from the federal Bureau of Labor Statistics, Podgursky's analysis suggests that teacher health and other insurance benefits amount to 9.1 percent of the average salary, compared to 6 percent for other professionals. Table 7 shows that the difference between 6 percent and 9.1 percent translates into annual costs of \$106 per student, or 1.28 percent of school budgets.

Table 7. Incremental Cost of Health/Insurance Benefits that Exceed Those of Other Professionals

Average teacher salary plus benefits*	\$50,000
Percentage of annual salary paid for health and other insurance benefits for teachers	9.1%
Percentage of annual salary paid for health and other insurance benefits for private sector professionals	6%
Per pupil cost of the difference between health/insurance benefits for teachers and other professionals	\$106.46
Portion of expenditures attributed to difference in health/insurance benefit rates of teachers and other professionals	1.28%

*SASS data 2003–04.

8. Above-Average Retirement Benefits: Teachers need income security when they retire, just as they need health benefits. But teachers' retirement benefits, like their health benefits are, on average, unusually generous when compared to the benefits received by employees in the

private sector. Like many public-sector employees, most teachers receive a traditional “defined benefit” pension upon retirement that guarantees a monthly income based on how much they earned when they were employed and how many years of service they accrued. Most private-sector employees, by contrast, receive pension benefits in the form of “defined contribution” plans, in which employers contribute a certain amount of money into a 401(k)-type retirement fund. Defined benefit pensions are, as a rule, more generous to employees and more costly to employers. This analysis calculates the difference between typical private-sector plans and those mandated by teacher contract provisions.

Podgursky’s analysis, based on Bureau of Labor Statistics data, suggests that retirement costs amount to 5.9 percent of the average teacher’s salary, compared to private sector retirement costs of 3.8 percent of the average salary. As Table 8 shows, the difference between 5.9 percent and 3.8 percent translates into annual costs of \$72 per student, or .87 percent of school budgets.

Unusually generous health and retirement plans create incentives for teachers to enter and stay in the profession. Many school districts, as a result, have disproportionate numbers of senior teachers. There are doubtless many senior teachers whose years of experience provide irreplaceable benefits for their students. But the previously-cited research suggests that more-experienced teachers are, on average, no more effective than teachers with modest experience, and there is some evidence that the oldest teachers may be less effective. As a result, typical health- and retirement-contract provisions, combined with annual salary increases based on years of experience, could be creating “benefit lock” among

Table 8. Incremental Cost of Retirement Benefits that Exceed Those of Other Professionals

Percentage of annual salary paid for retirement benefits for teachers*	5.9%
Percentage of annual salary paid for retirement benefits for private sector professionals*	3.8%
Per pupil cost of the difference between retirement benefits for teachers and other professionals	\$72.12
Portion of expenditures attributed to difference in retirement benefit rates of teachers and other professionals	.87%

*SASS data 2003–04.

veteran teachers that precludes school districts from hiring more talented teachers who are younger and less expensive.

Adding It Up

Taken in isolation, some of the provisions described above may seem inconsequential, amounting to 1 percent or less of school spending. But when the costs of these provisions are added together, they amount to a significant percentage of all school resources. As Table 9 shows, the eight provisions described above add up to almost 19 percent of all school spending. This amounts to roughly \$77 billion in school spending per year nationwide.

Table 9. The Total Cost of Common Teacher Contract Provisions

Contract Provisions	Cost as a percent of school budgets
Teacher salary increases based on years of experience	10.01%
Teacher salary increases based on education credentials and experience	2.10%
School days set aside for paid professional development	1.02%
Above average paid sick and personal days	.52%
Class size limitations	2.26%
Mandatory use of teachers’ aides	.89%
Above average health and insurance benefits	1.28%
Above average retirement benefits	.87%
TOTAL	18.95%

This is very likely a conservative estimate of the amount of money locked up by most teacher contracts, since it only represents the cost of common provisions. Many contracts contain other, less-common provisions that are also expensive: Some require that substitutes remain on payroll even when not needed, while others prescribe that districts set aside money, often \$100,000 or more, for teams of union members to spend as they see fit. Some districts even grant extra paid time off for teachers to renew their driver’s licenses.

Frozen Assets

There are a number of ways to repurpose the billions of dollars locked up in these common contract provisions. Some education policy analysts have called for increasing teachers' base salaries as a way to attract more and better teachers into the profession. The NEA has called for \$40,000 minimum salaries for all teachers (the average starting salary is currently about \$31,000), noting that accountants typically start at \$44,500 and software developers start at \$54,000.²³ Such a proposal would cost approximately \$680 per pupil nationwide, or 8.2 percent of current school budgets. That is less than half of the resources currently tied up in common teacher contract provisions.

There also have been calls for the reform of teacher compensation. Some states and districts, for example, have begun to offer additional pay for credentials like certification by the National Board for Professional Teaching Standards (NBPTS). Others have proposed giving bonuses to teachers willing to teach in high-poverty, low-performing schools, teachers with hard-to-find subject specializations like science and special education, and teachers who produce unusually large gains in student test scores. But teacher-contract provisions make such reforms difficult to implement in many places. Provisions that mandate that significant amounts of money be paid to teachers on the basis of their seniority and education credentials, for example, also often prohibit districts from basing salary levels on factors that policymakers have suggested may promote higher student achievement.

Changes in common contract provisions would also free up funding to increase the size of the awards under the new compensation measures, and thus help increase the incentives they give to teachers to do such things as work in high-poverty schools. Current salary incentives of that sort typically amount to only a few thousand dollars or less, not enough to provide strong incentives or change the dynamics of the teacher labor market. Indeed, many incentives have been proposed for years, but relatively few (with the exception of NBPTS certification) have been

put into practice on a wide scale. Money is often a major stumbling block to implementation.

One plan that would provide an additional \$25,000 in compensation to 25 percent of all teachers, and an additional \$10,000 to another 25 percent of all teachers, would increase that average school budget by \$601 per pupil, or 7.25 percent. This is just over a third of the amount of money tied up in the common contract provisions we examined for this report.

School districts could also repurpose funds to give schools flexible pots of money to meet the specific needs of the schools' teachers and students. At one school, teachers and administrators might collectively decide to use such funds to create intensive, ongoing school-based professional development programs for teachers. Another school might invest in new technology, or choose to hold additional classes later in the day or on Saturday for academically at-risk students, paying participating teachers an additional salary amount. Instead of using a defined-benefit pension plan that disproportionately benefits teachers who stay in the system for decades, a school district could choose to provide more generous, portable, up-front retirement benefits as a means of recruiting younger teachers who expect to change professions multiple times throughout their careers.

Such steps would not reduce funding for teacher compensation; rather, they would distribute compensation differently, in ways that potentially would be of greater benefit to students. And given that redistributing teacher compensation and changing teacher working conditions would likely be controversial within the teaching profession, school administrators who implement such changes would have to take steps to honor commitments on compensation and working conditions that they've made to current teachers.

But it's clear that school administrators and teacher leaders have more opportunities than they realize to make and pay for changes that promote higher student achievement. They need only take a hard look at their teacher contracts.

ENDNOTES

- ¹ Frederick Hess and Andrew Kelly, “Scapegoat, Albatross, or What?” in *Collective Bargaining in Education*, eds. Jane Hannaway and Andrew Rotherham (Cambridge, MA: Harvard Education Press, 2006).
- ² Rice, Jennifer King, *Teacher Quality: Understanding the Effectiveness of Teacher Attributes* (Washington, D.C.: Economic Policy Institute, 2000).
- ³ *Ibid.*
- ⁴ This amount refers to the average teacher salary in a central city. This amount was used instead of the nationwide average teacher salary of \$44,400 as the calculations done here are intended to shed light on the effect of labor negotiations in large cities, where contracts are most often in the spotlight.
- ⁵ *Survey and Analysis of Teacher Salary Trends* (Washington, D.C.: American Federation of Teachers, 2004).
- ⁶ The \$8,287 figure includes all operating expenditures for PK–12 education and excludes expenditures for adult education, community services, and debt service.
- ⁷ *Ibid.*
- ⁸ *Increasing the Odds: How Good Policies Can Yield Better Teachers* (Washington, D.C.: National Council on Teacher Quality, 2005).
- ⁹ Because data on average education credits earned are not available, analysis of their associated costs wasn’t included.
- ¹⁰ Consortium for Policy Research in Education, “CPRE Policy Brief: *Helping Teachers Teach Well: Transforming Professional Development*,” June, 1995.
- ¹¹ *Ibid.*
- ¹² *The Status of the American Public School Teacher* (Washington, D.C.: National Education Association, 2003).
- ¹³ See, for example, M.N. Olson, *Identifying Quality in School Classrooms: Some Problems and Some Answers* (New York: Metropolitan School Study Council, 1971).
- ¹⁴ M. Podgursky, “Fringe Benefits,” *Education Next*, 2003.
- ¹⁵ Tennessee’s Project STAR showed that in a study, dramatic class size reductions (to 12–17 students per class as compared with 22–26) yielded positive effects on student achievement.
- ¹⁶ See, for example, NYC’s Collective Bargaining Agreement as discussed in D. Ballou, *Shackling Principal’s Leadership* (New York: Manhattan Institute for Policy Research, 1999).
- ¹⁷ See, for example, Seattle Public Schools’ Collective Bargaining Agreement.
- ¹⁸ *Collective Bargaining: Bringing Education to the Table* (Midland, MI: Mackinac Center for Public Policy, 1998) Online at <http://mackinac.org/article.aspx?ID=1400> (Accessed 9/20/06).
- ¹⁹ Joan McRobbie, Jeremy Finn and Patrick Harman, *Class Size Reduction: Lessons Learned from Experience* (San Francisco: WestEd, 1998).
- ²⁰ J. Boyd Zaharias and H. Pate-Bain, “Early and New Findings from Tennessee’s Project STAR” in *How Small Classes Help Teachers Do Their Best* (Philadelphia: Laboratory for Student Success at Temple University Centre for Research in Human Development and Education, 2000).
- ²¹ Glenn Cook, *Gathering Storm* (Alexandria, VA: American School Board Journal, 2006) Online at <http://www.asbj.com/current/coverstory.html> (Accessed 5/23/06).
- ²² M. Podgursky, “Is There a Qualified Teacher Shortage,” *Education Next*, 2006.
- ²³ *The Bill’s Come Due* (Washington, D.C.: National Education Association, 2005) Online at <http://www.nea.org/neatoday/0510/coverstory.html> (Accessed 9/25/06).

Technical Appendix: Calculation of Costs

Cost of Salary Increments for Master's Degrees and Longevity

Average teacher salary (without supplements) per year*	\$45,400
Average number of pupils per teacher employed*	14.56
Average salary increment for a master's degree*	\$5,200
Average portion of teachers with a master's or above*	48.70%

$$\frac{\left(\begin{array}{c} \text{Average salary increment for} \\ \text{a master's degree} \end{array} \right) \times \left(\begin{array}{c} \text{Average portion of teachers with} \\ \text{a master's degree or higher} \end{array} \right)}{\text{Average number of pupils per teacher employed}}$$

Average number of pupils per teacher employed

Cost per pupil of salary for master's degrees \$173.93

Cost per pupil salary for master's degrees

Average per pupil expenditure (\$8,287.06)

Portion of per pupil expenditure attributed to compensation for master's 2.10%

Average salary increment per year of experience*	2.58%
Average years of experience**	14.8

$$\frac{\left(\begin{array}{c} \text{Average teacher salary per day} \\ - \text{Average salary increment for} \\ \text{master's degree} \end{array} \right) \times \left(\begin{array}{c} \text{Average portion of teachers with master's or higher} \\ - \text{Average first-year salary assuming 2.58\% increase} \\ \text{for 14 years (\$30,783)} \end{array} \right)}{\text{Average number of pupils per teacher employed}}$$

Average number of pupils per teacher employed

Cost per pupil of salary for longevity \$829.88

Cost per pupil of salary for longevity

Average per pupil expenditure (\$8,287.06)

Portion of per pupil expenditure attributed to longevity 10.01%

*Taken directly from, or computed from NCES 2003–04 figures for large/urban districts.

**Reported by AFT: Data on national trends in teacher salaries.

Cost of Paid Professional Development Days

Average teacher salary per day

$$\frac{\left(\begin{array}{c} \text{Typical number of} \\ \text{teaching days per year} \end{array} \right) + \left(\begin{array}{c} \text{Average number of paid} \\ \text{professional development days} \end{array} \right)}{\text{Average teacher salary (without supplements) per day*}}$$

Average teacher salary (without supplements) per day* \$245

Typical number of teaching days per year**	180
Average number of paid professional development days**	5

Technical Appendix: Calculation of Costs (continued)

Cost of Paid Professional Development Days (continued)

$$\left(\frac{\text{Average number of paid professional development days}}{\text{Typical number of teaching days per year}} \right) \times \left(\frac{\text{Average teacher salary per day}}{\text{Average number of pupils per teacher employed}} \right)$$

Cost per pupil of teacher salary for five contracted professional development days **\$84.27**

Cost per pupil of teacher salary for five contracted professional development days

Average per pupil expenditure (\$8,287.06)

Portion of per pupil expenditure attributed to teacher salary cost for 4.5 days **1.02%**

*Computed from NCES 2003–04 figures for large/urban districts.

**Reported median in NEA's Status of the American Public School Teacher (2001).

Incremental Cost of Higher Rates of Sick/Personal Days Than in Other Professions

Average number of teacher sick/personal absences per 180 days taken for teachers* 9.36

Average number of sick/personal days per 180 days taken for professionals* 3.06

Cost of a substitute teacher per day** \$100.00

$$\left(\begin{array}{l} \text{Average number of sick/personal absences per 180 taken for teachers} \\ - \text{Average number of sick/personal days per 180 taken for professionals} \end{array} \right) \times \left(\begin{array}{l} \text{Cost of a substitute} \\ \text{teacher per day} \end{array} \right)$$

Average number of pupils per teacher employed

Cost per pupil of substitutes to cover difference in sick days taken by teachers and other professionals **\$43.27**

Cost per pupil of substitutes to cover difference in sick days taken by teachers and other professionals

Average per pupil expenditures (\$8,287.06)

Portion of per pupil expenditure for subs to cover difference in sick days taken **.52%**

*Computed from figures reported by Podgursky (2003) which cites Bureau of Labor Statistics as the original source.

**Averages taken from a sampling of five urban districts' contracts.

Cost of Class Size Reduction Policies

Average teacher salary per day **×** Average benefit load rate (20.2%)

Average number of pupils per teacher employed

Teacher salary cost (loaded with benefits) per pupil** **\$3,747.99**

Technical Appendix: Calculation of Costs (continued)

Cost of Class Size Reduction Policies (continued)

$$\left(\frac{\text{Average teacher salary per day} \times \text{Average benefit load rate (20.2\%)}}{\text{Average number of pupils per teacher employed}} \right) - \left(\frac{\text{Average teacher salary per day} \times \text{Average benefit load rate (20.2\%)}}{\text{Average number of pupils per teacher employed} \div 0.99} \right)$$

Per pupil costs (teacher salaries only) of policies that have reduced class sizes by 1%

\$37.48

$$\left(\frac{\text{Average teacher salary per day} \times \text{Average benefit load rate (20.2\%)}}{\text{Average number of pupils per teacher employed}} \right) - \left(\frac{\text{Average teacher salary per day} \times \text{Average benefit load rate (20.2\%)}}{\text{Average number of pupils per teacher employed} \div 0.90} \right)$$

Per pupil costs (teacher costs only) of policies that have reduced class sizes by 10%

\$374.80

$$\left(\frac{\text{Average teacher salary per day} \times \text{Average benefit load rate (20.2\%)}}{\text{Average number of pupils per teacher employed}} \right) - \left(\frac{\text{Average teacher salary per day} \times \text{Average benefit load rate (20.2\%)}}{\text{Average number of pupils per teacher employed} \div 0.95} \right)$$

Per pupil cost (teacher costs only) of policies that reduced class size by 5%

\$187.40

Per pupil cost (teacher costs only) of policies that reduced class size by 5%

Average per pupil expenditure (\$8,287.06)

**Portion of per pupil expenditure attributed to costs of reduced class sizes by 5 %
(e.g. reducing average class size from 30 to 28.5)***

2.26%

*Based on NCES 2003–04 reported average expenditure of \$8287.06.

**Based on an average loading rate of 20.2% (see endnote 22).

Cost of Provisions that Necessitate Increased Use of Teacher Aides

Average aide salary

\$18,052

Number of students per aide

61

$$\left(\frac{\text{Average aide salary}}{\text{Number of students per aide}} \right) - \left(\frac{\text{Average aide salary}}{\text{Number of students per aide} \div 0.75} \right)$$

Per pupil cost (aide salary only) of provisions that necessitate 25% more aides

\$73.98

Per pupil cost (aide salary only) of provisions that necessitate 25% more aides

Average per pupil expenditure (\$8,287.06)

Portion of expenditure attributed to costs of increased aides by 25%

.89%

Technical Appendix: Calculation of Costs (continued)

Incremental Cost of Benefits that Exceed Those of Other Professionals

Average teacher salary plus supplements*	\$50,000
Percentage of annual salary paid for health and other insurance benefits for teachers	9.1%
Percentage of annual salary paid for health and other insurance benefits for private sector professionals	6.0%

$$\left(\begin{array}{l} \text{Percentage of annual salary paid for health} \\ \text{and other insurance benefits for teachers} \\ - \\ \text{Percentage of annual salary paid for health} \\ \text{and other insurance benefits for private} \\ \text{sector professionals} \end{array} \right) \times \left(\frac{\text{Average teacher salary plus supplements}}{\text{Average number of pupils} \\ \text{per teacher employed}} \right)$$

Per pupil cost of the difference between health/insurance benefits for teachers and other professionals **\$106.46**

Per pupil cost of difference between health/insurance benefits for teachers and professionals

Average per pupil expenditure (\$8,287.06)

Portion of expenditure attributed to difference in health/insurance benefit rates of teachers and other professionals **1.28%**

Percentage of annual salary paid for retirement benefits for teachers	5.9%
Percentage of annual salary paid for retirement benefits for private sector professionals	3.8%

$$\left(\begin{array}{l} \text{Percentage of annual salary paid for} \\ \text{retirement benefits for teachers} \\ - \\ \text{Percentage of annual salary paid for} \\ \text{retirement benefits for private sector} \\ \text{professionals} \end{array} \right) \times \left(\frac{\text{Average teacher salary plus supplements}}{\text{Average number of pupils} \\ \text{per teacher employed}} \right)$$

Per pupil cost of the difference between retirement benefits for teachers and other professionals **\$72.12**

Per pupil cost of difference between retirement benefits for teachers and professionals

Average per pupil expenditure (\$8,287.06)

Portion of expenditure attributed to difference in retirement benefit rates of teachers and other professionals **.87%**

*SASS data 2003-04.