

Class size

Draft

Class Size Reduction Plan to Ensure Teacher Quality

Reducing class size without attending to the qualifications and training of teachers will negate benefits gained through smaller classes. Students in a small class but with an ill-prepared teacher will have difficulty in achieving to high standards. In addition, research verifies that new and experienced teachers need training in how to teach more effectively in smaller class settings before the full benefits of a class size reduction can be realized. This proposal, therefore, strengthens support for high quality teaching while also reducing class size. In doing so, it is an investment in students **and** our teaching force.

Option A

To qualify for funds through this program:

- States must prove that they have fully certified teachers who meet the current state licensure standards to fill all positions created in LEAs that use funds from this program to reduce class size in grades K-3.
- States must also ensure that the percentage of uncertified teachers (i.e. teachers who do not meet the current state licensure standards) will not be increased within any LEA receiving funds to reduce class size.
- Funds unavailable to reduce class size because states do not have enough fully certified teachers who meet the current state licensure standards, must use the money from this program to develop a system which would ensure that all new and experienced K-3 teachers have the knowledge and skills to teach reading to **all** students and to teach effectively in smaller class settings.
- States shall ensure that LEAs receiving assistance under this program shall provide sustained, intensive, high-quality professional development for all K-3 teachers that is of sufficient intensity and duration to have a positive and lasting impact on the teachers' performance in reading instruction. Professional development shall also be aligned with state content standards in order to enable **all** children to meet state student performance standards in reading.
- In addition to resources from this program, states and LEAs may use resources from Title I, Goals 2000, America Reads, and the Eisenhower Professional Development Program to implement the professional development requirement for reducing class size.
- States that have met the target class size in grades K-3 may use funds from this program to improve the quality of instruction throughout the whole continuum of teacher

Draft

development.

Future funding will be contingent on:

- States decreasing the percentage of uncertified teachers within any LEA receiving funds to reduce class size.
- States demonstrating that reading achievement has improved in those LEAs that receive money through this program.

Option B

To qualify for funds through this program:

- States must ensure that the percentage of uncertified teachers (i.e. teachers who do not meet the current state licensure standards) will not be increased within any LEA receiving funds to reduce class size.
- States must provide a plan on how they will decrease the percentage of uncertified teachers within an LEA receiving funds from this program.
- States shall ensure that all new and experienced K-3 teachers participate in sustained, intensive, high-quality professional development that is of sufficient intensity and duration to have a positive and lasting impact on the teachers' performance in reading instruction. Professional development shall also be aligned with state content standards in order to enable **all** children to meet state student performance standards in reading.
- States may use funds under Title I, Goals 2000, America Reads, and the Eisenhower Professional Development Program to implement the professional development requirement for reducing class size.

Future funding will be contingent on:

- States decreasing the percentage of uncertified teachers within any LEA receiving funds to reduce class size.
- States demonstrating that reading achievement has improved in those LEAs that receive money through this program.

Class size ≤ 18

CLASS SIZE REDUCTION (CSR) FORMULA OPTIONS

Formulas:

Grades 1-8

Efficiency
1. **Class Size benchmark formula** -- takes into account state teacher salaries, number of new teachers needed to reduce class size to max of 18, and poverty/access to resources.

2. **Title I formula** -- state receives funding for CSR based on Title I

3. **State share of Medicaid spending** -- state receives share of CSR funding based upon share of total Medicaid expenditures.

Fairness
4. **Total population** -- state receives share of CSR funding based on share of total US population

For each formula:

1. How much \$\$ goes to each state?

2. How much of a class size reduction (of what ceiling) is paid for?

3. Run formulas assuming

(a) \$9.2 in federal funds with additional 20% from state match, and

(b) \$11.5 billion in federal funds, full federal funding no state match.

Fairness
Competition

2,000 schools

Granted, the study was well-designed. It followed more than 10,000 students from 75 schools for 10 years. But this was one study in one state and may not apply to schools in urban areas. Tennessee already had ample facilities with licensed teachers, and the students were mostly white and African-American. In California, half the students are either Hispanic or Asian, many of whom speak limited English, so the schools would have difficulty finding enough bilingual teachers. Moreover, the effectiveness of teachers depends on their ability to change instruction styles when moving from a large group to small group.

Cutting class sizes is expensive. In California, it is costing an extra \$800 or so per pupil per school year (not counting the cost of new classrooms). Portable classrooms cost more than \$50,000 each for cities like New York City and Los Angeles. National studies report increasingly tight labor markets for teachers because of rising enrollment and a large number of retirements.

Despite these pressures, politicians are taking advantage of the national economic boom to adopt strict rules on class sizes. In so doing, they are committing their states to one of the most expensive educational reforms possible and neglecting lower cost, effective alternatives like intensive teacher training, expansion of summer school, tutoring and investing in technology.

When the good times end, states won't have the luxury to adopt sweeping, unproven reforms. And parents and politicians alike may discover that reducing class sizes was not the magic bullet they thought it would be.

Caption:

Michael Kirst is a professor at the Stanford University School of Education.

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Access No: 05014819970911 ProQuest - The New York Times (R) Ondisc
Title: At Fire Island School, the Classes Are Tiny and the Test Scores High
Authors: Jacques Steinberg
Source: New York Times, Late Edition (East Coast)
Date: Sep 11, 1997 Sec: B Metropolitan Desk p: 1
Length: Long (1469 words) Type: News
Subjects: Academic achievement; Public schools; Class size; School finance; Property taxes; Education & Schools; Fire Island (NY); Finances

Abstract: Article discusses success of Woodhull School on Fire Island; elementary school, whose 54 students receive individual attention, spends nearly \$30,000 a year on each student; photo (M)

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Article Text:

CORNEILLE ESTATES, N.Y., Sept. 7 -- Only 40 miles east of the crowded classrooms of New York City, there is a school with just 54 children in seven grades.

That is one teacher for every eight pupils, if you remember your third-grade math, and one Macintosh computer for every two children.

It is an elementary school that spends nearly \$30,000 a year on each student. One that convenes poetry-writing classes a few steps away at the beach, where young students are encouraged to seek inspiration by closing their eyes and listening to the crashing surf.

No surprise then that the Woodhull School is one of the most successful in the state. It is also one of the most remote, the only public school on Fire Island, a 32-mile sliver of sand and gnarled pine off the South Shore of Long Island that is better known for its activities after school lets out for the year.

By Labor Day weekend, most of the seasonal residents have left Fire Island to restart their real lives. But several dozen hearty residents remain -- most of them electricians, plumbers, cooks and others who serve the affluent seasonal population and live here year-round, despite its isolation.

For them, sending their children to this public school is a perk that they enjoy at the expense of other families: those whose luxurious homes they tend and whose property taxes make the school possible. Those homeowners, who effectively pay the school's bills, send their own children to classrooms on the mainland that are far more crowded, be they public or private.

As a New York public school, Woodhull is so striking that it is something of an educational mecca. After touring it this summer, three New York City public school teachers left in tears. 'They said, 'This is wonderful,' ' recalled Ken Lanier, the school principal. ' 'It's a shame that the kids I teach can't have this.' '

The 79-year-old little red-brick schoolhouse is a place where children cannot avoid intense personal attention and rigorous class participation.

In the school's only fourth-grade class one morning last week, Karen McNulty pelted her 9- and 10-year-old pupils with questions about the Judy Blume novel 'Super Fudge.'

'Go through the book and find two nouns,' Ms. McNulty instructed her charges.

'The name 'Peter,' ' answered James Ragusa.

' 'Company,' ' said Kiley Phelan.

'Good, now find two verbs,' Ms. McNulty directed, and the words 'waved' and 'go' quickly came back.

Within a minute, all seven children in the class had answered a question.

Such intimate contact has translated into high achievement, as measured by the standardized reading tests that the state gives to third and sixth graders. At the Fire Island school last year, 100 percent of the students in the third grade could understand passages written on their grade level (compared with 51 percent statewide), and 80 percent of sixth graders were able to comprehend excerpts from books like 'Moby Dick' that are written for a much older audience. (That compares with 40 percent of sixth graders elsewhere.)

But academic excellence comes at a price. During the winter months on this rugged island, all the markets are closed. Staples like eggs or dog food are sold at two restaurants that remain open. For bulk shopping, most people head to the mainland, which is reachable by a bridge on each end of the island. But getting to those bridges is challenging.

That is because only a precious few automobile permits are given out to residents. And because there are no real roads, those residents lucky enough to have a permit must pilot four-wheel-drive vehicles over miles of beach or down narrow sidewalks. (During the summer, when cars are banned, ferries are virtually the only way on or off the island.)

The students, too, pay a price for isolation. Many students at the Fire Island school say they feel detached from life on the mainland. They also notice the lack of diversity in their midst (the school is almost exclusively white). And they feel the absence of boys and girls their own age.

For Brittany Metcalf, age 11, the school can be particularly lonely: on the brink of adolescence, she finds herself to be the only girl in the sixth grade.

'The good thing is you get a lot of attention from the teacher,' Brittany said last week, after a social studies class in which she sat at the head of a short rectangular table, three boys seated on each side. 'The bad thing is, you have no one to talk to who's the same as you.'

It is for this reason that the school ends at the sixth grade. Older students are transported in yellow four-wheel-drive school buses across the dunes and over the Robert Moses Causeway to middle and high schools in the Long Island communities of Islip and Babylon.

'I can't wait to get out of here,' said Glen Roesch, a sixth grader. 'There's barely any people to know.'

Until they reach the age of 12, though, the students have little choice but to make the elementary school here the center of their lives, given that the rural island offers them few other options during the desolate winter.

'The whole community, when you have children, revolves around the school,' said James Ragusa, 40, a general contractor who moved here nine years ago and who, like many parents, was barefoot when he deposited his 9-year-old son, James, at school on Friday morning.

The school has taken steps to compensate for the isolation: frequent trips to Broadway shows and institutions like the Liberty Science Center in New Jersey. And those outings are about more than watching a musical or learning about technology.

'We know, when we go, there will be New York City districts there with a very different population than ours,' Mr. Lanier said. 'It's a very conscious extra effort here.'

The school also fields coed sports teams in basketball and softball that play against teams from other communities, and arranges swimming lessons at the YMCA in Bay Shore. In the winter months, it offers after-school clubs in drama, sewing and model-building.

The school can afford all of this largely because of the high value of Fire Island's 4,000 or so homes -- a total of \$1.5 billion. But because the school's population is so small, the burden on most taxpayers is relatively light.

According to Mr. Lanier, a family living in a house worth \$77,500 on Fire Island pays \$594 in annual school taxes. In Bay Shore or East Islip, the annual school tax for the same home would be more than \$6,000.

Although the average spent per pupil appears steep -- \$29,877, compared with \$9,162 in the rest of the state -- that is mostly because the salary of a teacher must be divided among 7 students here, compared with 32 in New York City, Mr. Lanier said.

What the school gets for its money is an almost familylike atmosphere, where students answer questions as freely as if they were talking at the dinner table and are often on a first-name basis with the children of their teachers -- many of whom live on the island.

A beginning reader might run eagerly into the next classroom to show off her new skills to the older children, or find a supportive listener outside at the school's maintenance shack.

Other schools might be able to reproduce that cozy atmosphere, but few can bring the natural environment into the classroom as comfortably as the Woodhull School.

For science class, Ms. McNulty sometimes arms her students with nets and brown paper bags and sends them on the short walk to the ocean, where they can comb for shrimp, sea horses and other organisms to catalogue.

And every so often, something unexpected happens. During one lunch hour four years ago, teachers told all the children to grab their meals and head for the beach to see a surprise luncheon guest.

It was a whale, lurking just off the shore.

Caption:

The Woodhull School's four-wheel-drive bus, above, maneuvers the dunes on Fire Island. The school has only 54 students, so children receive individual attention. Loretta Ferraro, left, taught a class of fifth and sixth graders last week. (Photographs by Vic DeLucia/The New York Times) (pg. B1)

'IN BRIEF: The Little School That Could'

At Fire Island's only elementary school, with 54 students, the spending per pupil is among the highest in the state. So is the achievement. Chart shows average 1996 class sizes, 1994-1995 school year spending per student and percentage of third graders reading at grade levels, for 1996, for Fire Island, New York City and New York State. (Source: New York State Department of Education) (pg. B5)

Map of Fire Island showing location of Corneille Estates: A tiny public school benefits from Fire Island's high property values. (pg. B5)

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Title: Special Education Class Sizes Are Linked to a Drop in Scores
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Education & Schools; Special Education (Handicapped)
Names: Gottlieb, Jay; Alter, Mark; Gottlieb, Jay (Prof); Alter,
Mark (Prof); New York City; New York State

Abstract: Study by New York University Profs Jay Gottlieb and Mark Alter concludes that decision by New York City and state to increase size of some special education classes has led to decline in student achievement; recommends that city reverse its decision to increase number of students to eight from five in so-called resource rooms, which pull children who are lagging behind their peers out of regular classes for increased instruction (M)

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Article Text:

A decision by New York City and the state to increase the size of some special education classes has led to a decline in student achievement, according to a study by two New York University professors.

The researchers recommended that the city reverse its decision to increase the number of students to eight from five in so-called resource rooms, which pull children who are lagging behind their peers out of regular classes for increased instruction.

But state officials said the \$75,000 state-financed study had been hampered by its small size and short time span, looking at only 45 schools over a period of just six months. They said that while the study raised troubling questions, more work needed to be done to determine whether class size alone was responsible for the decline in achievement or whether there were other factors, such as poor attendance, insufficient teaching time or the kind of teaching methods being used.

'I think New York City has to start to peel that onion and see what the factors are impeding reading achievement,' said Larry T. Waite, the coordinator of special education policy for the State Education Department. 'Changing one factor alone may not be the answer.'

The authors of the study, Jay Gottlieb and Mark Alter, two education professors at N.Y.U., complained that the city Board of Education had not provided them with system-wide resource room scores, as requested.

The study found a sharp decrease in sixth-grade reading scores in 1995-96, after the class sizes were increased. It found less striking decreases in the third and eighth grades, where there already was a downward trend.

From 1995 to 1996, sixth-grade reading scores dropped 13.2 percentage points, to 15.82 percent of students reading at state minimum competency levels from 29.02 percent. From 1994 to 1995, before the change in class size, scores had dropped less than one percentage point.

In the eighth grade, scores dropped 9.28 points after class size increased to 47.16 percent, the study found, but scores in eighth grade had already declined 6.65 points in 1993-94, the year before the change.

In third grade, scores declined 5.27 points after the change to 14.20

percent. But third-grade scores had declined 8.21 points the year before.

There was no significant change in math scores at any grade.

'When you increase the size, you dilute the instruction, and children appear to fall farther behind,' Dr. Gottlieb said.

But Dr. Gottlieb conceded that the pre-existing downward trend raised questions about the overall effectiveness of resource rooms. 'Is there any evidence that resource room improves children's performance?' he asked. 'In this city I don't know of any data to support that.'

The increase in class size saved \$26 million by cutting the number of teachers needed in resource rooms, which serve about 40,000 children, the study found. It also found that high rates of absenteeism brought the actual number of students below eight per class. Average attendance was 5.9 students in elementary school and 4.1 students in middle and high school.

Francine Goldstein, executive director of student support services for the board, said that the study's findings were being considered as part of an overall drive to reform special education.

An education reform goes awry.

CLASS CONFLICT

By Robyn Gearey

I hadn't been in California twenty-four hours when I began to realize that the schools were experiencing a few technical difficulties implementing Governor Pete Wilson's much hyped class-size reduction initiative. "Do you wanna teach second grade?" called a voice from the teachers' lounge. "I'll pay you fifty bucks myself." Startled, I looked around, then noticed a group of teachers sitting at a long table by the door. One of them was waving, trying to catch my eye. Thinking the offer a joke, I laughed. "I'm a journalist, not a teacher," I protested. "Babysitting is the closest thing I have to teaching experience." The teacher wasn't fazed. "Do you have a college degree?" she asked. "Yes," I replied. "Well, then," she said, satisfied, "you're perfectly qualified. When can you start?"

That was the first clue. The second came a few days later when I read a *Los Angeles Times* letter to the editor written by Lori Borcover, whose daughter's school was so tight on space that it closed the library in order to use it as a classroom. Soon after, the *Times* reported that an elementary school in Costa Mesa had turned its auditorium into classrooms—eliminating school plays and other activities. The school's principal told the *Times*, "This takes away a major part of our educational programs."

Like the teacher-hiring frenzy, the classroom-space crunch was part of a manic attempt by California schools to cash in on the governor's plan, unveiled last July, which promised a \$650 per child subsidy for every classroom in the first and second grades that met the twenty-students-per-teacher standard by February 16. (The program also applied to some kindergarten and third-grade classes.) Most did, in part by holding classes in gyms and teachers' lounges, and hiring unqualified teachers. And how has Wilson responded to this chaos? This year he has decided to expand the program, throwing the schools into another round of turmoil.

Class-size reduction is, at least in theory, a great idea. Dozens of studies have shown it to be one of the most effective ways to raise classroom achievement. Prior to Wilson's initiative, California's classrooms were the most crowded in the nation, averaging about thirty kids. And so when Wilson discovered that, in 1994, 56 percent of the state's fourth-graders were rated "below-basic" on a nationwide reading exam, he made class-size reduction a crusade. The response was overwhelming. "This is the most exciting time in twenty or thirty years," gushed Delaine Eastin, superintendent of public instruction in

California. "I think this is the start of a renaissance, effused Clovis Unified School District Superintendent Walt Buster. A headline in the *Los Angeles Times* declared: "SMALLER CLASSES, BIG IMPROVEMENT."

But, as the saying goes, the devil is in the details. To get results quickly, Wilson set a deadline and offered a financial incentive. The schools began struggling to find space. Many were already overcrowded, with one in seven relying on a year-round academic schedule to accommodate the overflow. And that was before the governor's plan created a need for 20,000 new classrooms.

Wilson's initiative set aside \$200 million for new classroom space, but that space is not easy to come by. Portable classrooms, if the school has the land, are one option, but they are expensive (they cost up to \$54,000; the state is only allotting \$25,000 per new classroom) and rare. California manufactures only 2,500 portable classrooms a year; the 20-1 initiative has generated orders for some 15,000. The state's department of education estimates that the backlog now runs two to three years.

Construction is another option, but it also requires more land, money and time than most schools can spare. So, in the meantime, makeshift classrooms—libraries, cafeterias and music rooms—will have to suffice. Many schools have opted to squeeze two teachers (and forty kids) in one regular-size room, a decision that even the department of education, the initiative's most enthusiastic proponent, calls "inadvisable."

And if school administrators are desperate for space, they're even more desperate for teachers. California accredits fewer than 5,000 new teachers each year; to meet the 20-1 standard the state needs 20,000. Even before Wilson announced his initiative, California had trouble attracting enough qualified teachers—in 1994, 11 percent of its teachers were working with either a temporary or an emergency license, or no license at all, already the highest percentage of non-credentialed teachers in the country. Since the initiative passed, one-third of the teachers hired to fulfill it have lacked traditional credentials. In California today, anyone with a bachelor's degree and a passing score on a basic skills test (which many educators say is on a fifth-grade level) can teach. "We've reached so deep into the pool, we're now taking people we wouldn't have hired a year ago," said Douglas Mitchell, a professor at the University of California-Riverside.

The influx of unqualified teachers makes many people nervous. "I feel better having thirty-two students with an experienced teacher than I do with twenty and a totally inexperienced teacher," says Rebecca Ryan, president of the Pomona district governing board. In a *Los Angeles Times* op-ed, Dennis L. Evans, a professor at UC Irvine, said, "An elementary class of 20 taught by an ill-prepared 'instant' teacher will prove far worse for the students involved than if they were in a class of 40 taught by a highly qualified and dedicated teacher." Some fear that the teacher shortage is exacerbating the inequalities between urban and suburban schools. Wealthy suburban districts can afford to lure experienced teachers from

other parts of the country, even Canada, to fill their classrooms. It is the poorer, urban schools that are forced to rely on inexperienced teachers.

And since Wilson's class-size initiative only applies to younger grades, many school officials admit they have had to shortchange older students to reduce class sizes in the lower grades. James A. Fleming, superintendent of the Capistrano Unified School District, said that his district had to take funds away from a middle-school English program to help pay for the initiative. There are long-range financial concerns as well. The state only provides a fraction of the funds for the new classes and teachers, and, while most communities successfully scrambled to meet this year's deadline, it's likely that they will begin to default in ever increasing numbers. Mike Fine, the chief financial officer of the Newport-Mesa Unified School District, told *The Los Angeles Times*, "I think at least one-third of the districts who instituted the class-size reduction won't be able to sustain it for more than three years."

So it was quite a surprise last January when Pete Wilson announced that his 1997-98 budget proposal allocated an additional \$304 million to *expand* the initiative to fully include both kindergarten and the third grade. Administrators who have spent the past six months struggling to cut first- and second-grade classes were hoping the new budget might provide additional money to help them cope with the financial strain incurred in meeting this year's deadline. But instead, they face the Sisyphean prospect of acquiring another 5,000 teachers and classrooms. No wonder many educators found it hard to share Wilson's enthusiasm. As one L.A. school official put it: "We are too busy trying to recover from the governor's last great idea." •

PIGTOWN DISPATCH

BUSINESS AS USUAL

By Joe Mathews

Three years ago, the police officers who conduct prostitution sweeps in this southwest Baltimore neighborhood noticed a trend. The women they had been arresting for years along Washington Boulevard—Pigtown's main street of Formstone rowhouses and half-empty storefronts—no longer gave Pigtown addresses. "A lot of the women had moved to the suburbs," says Officer Van Watson. "They still came into the city to turn tricks, but other than that, they didn't see any hope or opportunity there. There was nothing."

Pigtown's demimondes aren't the only ones disillusioned by life in this integrated slum. Once a flourishing residential and industrial neighborhood anchored by

the B&O Railroad, Pigtown has been sliding downhill for years. The majority of the 6,500 people who live here are high-school dropouts, and nearly one in six adults is unemployed. Although violent crime is low and Pigtown has a small group of new middle-class home buyers, the community consists largely of small-time criminals tethered to the drug trade and older working-class people trapped in their homes by it.

But the spring of 1995 brought the promise of change. Two new residents arrived in Pigtown. PTP Industries, Inc., a battery and computer disk packaging firm, moved into a building on Washington Boulevard. And something called the federal empowerment zone arrived from the nation's capital—part of a massive government effort to bring businesses back to inner cities.

The feds had chosen Baltimore as one of six federal urban revitalization areas. The city's share of the \$3.5 billion empowerment pie (it rivals the War on Poverty in size) was \$100 million in grants, concentrated in six neighborhoods or "villages," of which Pigtown was one. The zone was classic corporate welfare: it offered a \$3,000 rebate on a company's (in this case PTP's) payroll tax for each zone resident hired. And, by targeting the benefits to specific areas, federal officials hoped to create controlled laboratories for economic development. To help with Pigtown's resurrection, Maryland gave PTP a sweetheart lease on 330,000 square feet in one of Pigtown's largest buildings, an old Montgomery Ward warehouse.

In Pigtown, the notion of an empowerment zone, and a company willing to take advantage of it, tapped a powerful nostalgia for the long-ago days of plentiful industrial jobs. Even Pigtown's name suggests a better era, a century ago, when hogs were driven through its streets on their way to the slaughterhouses. "A lot of us spent time talking with the PTP people about poverty and jobs," says Arnold Sherman, a former member of the neighborhood's empowerment board. "I believed PTP was going to be an answer to the unemployed, to some of the prostitution, to many problems." PTP needed to double its workforce, from 250 to 500. The new hires would be for the kind of low-skill, entry-level jobs that Pigtown's poorest residents could do.

Pigtown had the makings of an empowerment zone success story, a model for those who believe government can employ business to fight poverty. Except that it hasn't turned out that way. The fact that both sides in Pigtown—community and company—consider the experience a failure stands as a reminder of an unpleasant truth: too many inner-city residents are unable to adequately perform even the simple assembly-line work that PTP offers.

Certainly, Pigtown residents were eager for work. As the April 1995 opening of the PTP plant approached, neighborhood leaders fanned out, distributing flyers with information about the new jobs. More than 160 people attended a job fair; PTP hired 103. They found about another three dozen workers through a city job-training



America has no greater glory than its cherished tradition of immigration. This tradition should be preserved. I am not advocating an end to, or even a major long-term reduction in, immigration. Indeed, I favor increasing the number of skilled and professional immigrants. And, contrary to the crypto-racist alarmism of right-wingers who call for immigration reform, I think that the best feature of the recent wave of immigration is its wonderful non-white diversity.

Let us hope that the president will have the moral and political courage to resist the strange union of business interests, naive libertarians and misguided left-wing urban advocates that has stymied all past attempts at meaningful immigration reform.

ORLANDO PATTERSON is John Cowles professor of sociology at Harvard and author of the forthcoming *The Ordeal of Integration*.

Size matters

If any of the president's staff flicked on the tube between stump speeches on the campaign trail, they would have noticed that education is in. Not since the days of "Room 222" and "Welcome Back, Kotter," have there been so many shows about school in prime time: "Mr. Rhodes," "Nick Freno: Licensed Teacher," "Dangerous Minds." There are lessons to be learned here—and not about licensing teachers.

The obvious one is that never, perhaps, in modern American life has education been a hotter issue. The less obvious one has to do with class size. Have you ever noticed, Mr. President, how on all these shows, the viewer gets to know only a few of the students? There's a reason for that. In a thirty-minute sitcom or an hour-long drama, a viewing audience can only get to know a handful of kids. Similarly, a typical teacher can only get to know so many students in a fifty-minute period. On "Welcome Back, Kotter," for instance, the sweatshops monopolized Mr. Kotter's time while the good kids languished in the background. And as it is for the TV audience, so it is for the typical high-school teacher. In fifty minutes she can only get to know so many kids.

In the next four years, Mr. President, you should make reducing class and school sizes, particularly in poorer, overcrowded schools, a top goal. As governor of Tennessee, Lamar Alexander financed a study of the effect of class size on learning in the state's

rural, suburban and urban schools. It showed that smaller classes during the elementary school years produced dramatic boosts in student achievement—regardless of student background—and that these gains held even after students were returned to larger classes in later years. Everyone knows that smaller classes work; they're in large part what affluent parents are paying for when they send their kids to private schools.

The place to start is in the earliest grades, kindergarten through third, in order to give all children the solid educational foundation they need to succeed later. Nothing would do more to help all children to read by the third grade, as President Clinton has proposed, than to reduce all elementary school classes to 20 students or less during these years.

Most people assume that school districts would have to hire lots more teachers if they reduced class size, but they wouldn't. In too many districts across the country, teachers work outside the classroom, in administrative positions created partly to respond to the needs of teachers in overcrowded classes and schools. In New York City, for instance, the student-to-teacher ratio is approximately 16 to 1; classes remain large, however, partly because so many teachers aren't teaching and because of overcrowding.

Instead of giving money to states for special education or other "pull-out" programs, the federal government should give funds to schools exclusively to reduce class size; if every class, particularly in the earliest grades, had 20 students or less, then every child, in essence, would receive a "special" education. And just as every class should have no more than 20 students, every school should have no more than 20 teachers. Teachers get lost in big schools, just as kids do. Smaller schools and classes will create the kind of communities where teachers, parents and students can work together and know each other as individuals. If you can push for school uniforms, Mr. President, you can push for smaller classes. Call it your 20/20 vision for school reform.

SARA MOSLE is a contributing writer for *The New York Times Magazine*.

Don't ask, don't tell

Intellectuals love to imagine that the people who wield real power are just waiting to be told how to use it. This fantasy of access and influ-

ence is a kind of *déformation professionnelle*, and one with a long, richly ironic history: think of Seneca and Nero, Voltaire and Frederick the Great, Michael Lerner and the First Lady.

For a politician, President Clinton seems to be pretty well-informed. Even his enemies concede that he does his policy homework, and his political instincts are legendary. I would be amazed if, at this late date, a journalist, a pundit, or even a bona fide expert in a genuine field of study could suggest to him a significant course of action he or his handlers have not already considered, focus-grouped and triangulated from here to the moon and back.

But he's not a free man, either: he has constituencies to satisfy, contributors to reward, political debts to pay and, of course, his own career to advance. These considerations matter a lot more than bright ideas, or right ideas. Many eloquent opponents of the welfare bill had the president's ear, including some of the policy experts who'd helped him formulate his own plan. Whatever one thinks of the president's decision to sign the measure into law, I don't think there's much doubt that the only arguments that counted in the end were the ones about his own immediate political fortunes. Does anyone think the president really believes that uniforms and the Internet are the keys to educational progress? Or that what battered women need more than anything else is their own emergency number?

Journalists are supposed to speak truth to power. But I've always wondered what the point of it is. If power were interested in truth, we would be living in a very different world. Why not speak truth to the powerless, who at least have something to gain from listening?

If President Clinton wants to know what I think are the problems and possibilities of contemporary American society, he can always subscribe to *The Nation*, where I've been writing for years. Or he could just call—I work at home, I'm in the book. That he hasn't requested my views on any subject, and communicates with me only indirectly, through Democratic Party junk mail addressed to "Occupant," makes me suspect he's not that curious about my views. I don't blame him a bit. If I were president, I would feel the same way.

KATHA POLLITT is a columnist for *The Nation*.

LEVEL 1 - 13 OF 201 STORIES

Copyright 1997 The Time Inc. Magazine Company
Time

October 6, 1997

SECTION: EDUCATION; Pg. 85

LENGTH: 577 words

HEADLINE: **CLASS-SIZE WARFARE;**
SOME NEW YORK PARENTS TRY TO HIRE AN EXTRA FOURTH-GRADE TEACHER. IS THIS UNFAIR
TO PUBLIC SCHOOLING?

BYLINE: ROMESH RATNESAR, WITH REPORTING BY ELAINE RIVERA/NEW YORK

BODY:

The move seemed routine enough in a **school** system strapped for cash. In late September, New York City **school** officials laid off a fourth-grade teacher at Public **School** 41 in Greenwich Village, dispersing her students into the **school's** four other classes. That pushed the average fourth-grade **class size** from 26 to 32. It also pushed parents over the edge. Within days of hearing the news, a group of parents cobbled together \$ 46,000 to cover the teacher's salary. When city **schools** chancellor Rudy Crew nixed the buyout, saying it would "adversely affect the opportunity for equity" among the city's **schools**, the parents went to court and took to the streets. After a week of rancorous meetings, the two sides struck a deal last Thursday that reinstated the teacher, Lauren Zangara, and returned the parents' money--but barred them from any future attempt to pay faculty salaries. The city "will allow parents to make valuable contributions to their **schools**," Crew said, "within appropriate limits."

The rumble in the Village highlighted a quandary facing middle-class parents across the U.S. With state and local governments slashing public-school budgets, parents often face an unhappy choice: supplement their children's creaky classrooms with their own cash or stick the kids in pricier, more exclusive private schools. While parents have long held bake sales and sold raffle tickets to drum up extra funds for local schools, fund raising today is growing more elaborate and controversial. In Bowie, Md., a nonprofit foundation set up by parents is helping finance a \$ 5 million auditorium. In Winchester, Mass., the Foundation for Educational Excellence dispenses \$ 50,000 a year in grants to enterprising teachers. And public-school boards in most major cities say parents are free to kick in for everything from clean football uniforms to new computers.

So why all the fuss about P.S. 41? Well, buying extra classroom materials is one thing; buying extra teachers is another. When directed toward items like staff salaries, educators say, private funds can widen the disparity between schools in poor neighborhoods that rely on government funds, and those in middle-class communities that can tap off-the-books parental money. Even some parent advocates got uneasy over the New York parents' brazenness. "The running of public schools should be the responsibility of the public through tax monies," said Lois Jean White, president of the national PTA. Other critics weren't so diplomatic. "It's not an 'extra' when you're talking about



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Time, October 6, 1997

subsidizing salary for a teacher," says Jonathan Kozol, author of the 1991 book *Savage Inequalities*. "The moral justification of public education is being ripped apart."

Several parents did threaten to relocate their children to private schools if Crew didn't reinstate Zangara. But the parents refuted the image that they were pampered yuppies with money to burn, pointing out that the school has working-class families too. They also say that the loss of one teacher would make the size of each fourth-grade class 10 students larger than the state average. Said P.S. 41 father Fred Moshary: "Parents anywhere would have done the same thing." Those words were prophetic. At week's end, parents of second-graders in nearby Queens had raised \$ 20,000 toward saving a teacher from the budget ax. They vowed not to rest until they succeeded.

--By Romesh Ratnesar. With reporting by Elaine Rivera/New York

GRAPHIC: COLOR PHOTO: TODD MAISEL, VILLAGE VANGUARDS: P.S. 41 parents like Carrie Bianchi, left, and Sandra Soehngen raised \$ 46,000 to pay a teacher

LANGUAGE: ENGLISH

LOAD-DATE: September 30, 1997

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LEVEL 2 - 6 OF 22 STORIES

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School Planning and Management

July, 1997

SECTION: No. 7, Vol. 36; Pg. 18

IAC-ACC-NO: 19766971

LENGTH: 4397 words

HEADLINE: A lesson in classroom size reduction; includes related articles; Cover Story

BYLINE: Hyman, Steve

BODY:

Administrators nationwide can learn from California's classroom size reduction plan and how districts implemented it.

In May of 1996, California Governor Pete Wilson found himself in a difficult position. California **schools** were swelling with students, the result of the recent baby boom and the state's continual growth in population. Simultaneously, test scores revealed that reading skills in many of California's **schools**, especially those located in urban areas, lagged behind scores in the rest of the nation. Another publicized study found that California ranked 40th in the nation on spending per pupil.

Fingers were pointed at Wilson, whose approval rating had dropped dramatically since his embarrassing withdrawal from the 1996 presidential election. But Wilson fought back. The state had collected extra tax revenue for 1995, and state law dictated that the money had to go to education.

The Plan

Sensing an opportunity, Wilson created a \$ 771 million initiative called classroom size reduction (CSR). Wilson's goal was simple: He wanted all kindergarten, first-, second- and third-grade classrooms to have 20 or fewer students. Wilson said that the would give school districts \$ 650 for each student in a reduced classroom in the 1996-97 school year. An additional fund of \$ 200 million would be created to help those schools facing a critical shortage of facilities. This past May, Wilson proposed expanding the amount to \$ 800 per student in the new state budget (which will be voted on this summer), while allowing schools to use some of that \$ 800 for new facilities.

The CSR program received high praise from parents, teachers and the press. And, in many ways, the results have been extraordinary: By February of this year, 851 of the state's 895 public school districts had qualified for the program, according to the latest figures from the state department of education.



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Although many schools were unable to reduce **class size** in all four grades, many schools were able to reduce first and second grades from more than 30 students per class.

But there are two sides to the story. While few people criticize the legitimacy and effectiveness of smaller classrooms, many school district administrators have found that the \$ 650 Wilson was paying for each student was, in fact, nowhere near the real cost of the program.

Three questions hounded California administrators.

1. Where were all the extra classes created by CSR going to be housed?
2. Who was going to teach those classes?
3. If \$ 650 per student didn't cover the cost, where was the extra money going to come from?

Los Angeles' Strategy

The mother of all California school districts, Los Angeles Unified, provided some revealing answers to all three questions. LAUSD is the second-largest school district in the nation (with more than 668,000 students) and its many serious problems - deteriorating buildings, crime and a top-heavy administration - are well chronicled in the press, often on a daily basis.

CSR was asking LAUSD to reduce **class size** at a time when LAUSD was already looking at a record enrollment increase of 18,000 students heading into the 1996-97 school year. Factoring in CSR, it appeared that LAUSD would be short 27,000 seats. This was the problem that faced Gordon Wohlers, LAUSD's assistant superintendent in charge of classroom size reductions.

Wohlers and his colleagues tackled the problem systematically. First, they realized they were dealing with a facility shortage and convinced the LAUSD board to order 1,000 portable classrooms, all of which should be in place by this fall.

Next, they asked the LAUSD board of education to approve various temporary measures that would ease pressure on schools. One measure allowed schools to use any available space for classrooms, including teachers' lounges, auditoriums and libraries. Another measure allowed 40 students to use the same classroom as long as two teachers were present to divide the class in half. Other schools, already stuffed to the gills, were permitted to adopt multitrack, year-round programs.

These measures, along with hiring more than 1,000 teachers, allowed LAUSD to place 98 percent of its first and second graders in the CSR program. "The problem we have now is that we can't go further than this," says Wohlers. "The reason is we have nearly 100 elementary schools that are filled to capacity. Absent of new construction, we cannot expand the CSR program to the third- and fourth-grade level."

The other problem, and one that has become endemic throughout the state, is money. LAUSD, even with the \$ 650 per student received from the state, had to spend approximately \$ 97 million from its own general funds, not including the



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cost of the portables and educational materials. Wohlers estimates that the real cost of implementing CSR was almost \$ 1,000 per student.

The district did receive some good news in early April, when L.A. voters passed a \$ 2.4 billion school bond measure - the same measure that had suffered a narrow defeat at the polls last November. The problem, however, is that the money is specifically earmarked for desperately needed school repairs and to fund construction of much-needed high schools.

Thus, the future of CSR in Los Angeles is already in question shortly after it has begun. Everyone loves the smaller classrooms, but LAUSD faces an enrollment that will continue to grow with the Southern California economy.

"Overall, we are going to have to invest more money into education if we are going to get the results the public is investing in," says Wohlers. Schools.

Mammoth Lakes' Strategy

Mammoth Lakes, population 6,000, couldn't be more different from Los Angeles. Located in a remote alpine valley in the Eastern Sierra Nevada Mountains, Mammoth Lakes is a popular year-round destination because of its skiing, fishing and camping.

Mammoth Elementary School serves not only the town of Mammoth Lakes, but much of Mono County, one of the more sparsely populated counties in California. Interestingly, its elementary school has 634 students, whereas its middle school and high school have about 300 each - reflective, again, of the mini-baby boom of the late 1980s.

Before CSR, Mammoth Elementary also had as many as 34 students in some of its first- through third-grade classes. This did not represent the quality of life that many of Mammoth's residents left L.A. to pursue. Any possible way of reducing **class size** was appealing.

"We went into CSR with our eyes open," says Brian McBride, principal of Mammoth Elementary School. "The benefits of smaller classes are obvious, but the downside is that it cost our general fund about \$ 83,000 because [CSR] was not fully funded."

Mammoth Elementary hired seven teachers, all with experience, which wasn't difficult because the town is a desirable place to live. But the school is now using every inch of the building for classrooms and is facing the prospect of changing to a year-round schedule to accommodate CSR. The school also placed an order for a portable classroom, which cost \$ 60,000 because the portable must withstand the sizable snowfalls typical of the area.

The architecture of the school provided common areas in the middle of the classroom area. Two of those areas were converted to classrooms, and a conference room was thrown into the mix as a small-group instruction area. McBride is thankful that, for now, he was spared having to use the cafeteria, but he isn't happy about losing his second grade's common area, which was previously used for art projects and theater activities.

Nevertheless, all 16 of Mammoth's first through third grades now have 20 or



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fewer students. "Most of us who went into this thing knew it wasn't a moneymaker," says McBride. "But we went into it with the thought that we can afford to do it right now and that we should because we have very high **class sizes**."

But McBride offers a warning: "The state is going to have change the funding or this will be a two-year experiment."

Oxnard's Strategy

Oxnard is located in a fertile agricultural valley just north of Malibu. The school district has 14,300 students enrolled, many of whom are from low-income families.

"Everyone applauds the concept of CSR," says Sandra Herrera, assistant superintendent of business and fiscal services for the Oxnard School District. "But we were already 100 percent multitrack at all of our schools, and all of our classrooms were in use year-round. We have no place to put the children."

Oxnard, like many other school districts, faced political pressure to im-ple-ment CSR. But, as of late April, the district had managed to get only the first grade into the program. An elementary school under construction is scheduled to open this summer and, if the second grade is fully implemented into CSR, the new school will open at complete capacity.

One of the problems with CSR in California is that the \$ 650 per pupil funding is not 'meant to cover the cost of building new facilities. Districts that need extra money for facilities can apply for money from a separate \$ 200 million fund - but \$ 200 million represents little money for the most populous state in the nation. One of the results of this, according to Herrera, is that school districts with critical needs, such as Oxnard, are unable to compete with districts that do have space. In other words, a problem that CSR was designed to alleviate - overcrowding in schools - tends to help overcrowding only in wealthier districts, while furthering crowding in poorer districts.

Oxnard added 45 portable classrooms, which it will pay for from its general funds in the next 10 years. A school bond failed to pass by 80 votes on March 4 of this year, but passed on June 3, rising above the two-thirds vote required for passage by just 42 votes. "You try to get the word out in relationship to the need," says Herrera, "but it's hard for people to realize how great the need is."

San Diego's Strategy

The San Diego Unified School District, with about 136,000 students, was fortunate. Two years before Governor Wilson's CSR program was implemented, the city school district had begun its own program. Heading into the 1996-97 school year, the average **class size** in first and second grades was already 25.5 students.

"The CSR program wasn't as hard on us because, financially, we made sacrifices earlier," says Jan Hintzman, supervisor of facilities program for the San Diego Unified School District.



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Hintzman and her colleagues solved the most serious problem - lack of facilities - by considering every inch of every school as fair game for use as classrooms. What Hintzman and her colleagues soon found was that most schools were giving up anything to participate in CSR, including lounges, auditoriums and libraries. Hintzman estimates that replacing such facilities will cost the district \$ 14 million.

"As a facility planner, I could never have gone out and done some of these things," says Hintzman. "I think it's a sign that everyone realized we had to do something to improve student performance."

Long Beach's Strategy

The Long Beach Unified School District, which has 84,000 students, made similar sacrifices. As soon as the initiative was signed into law, principals and elementary school teachers were called back from summer vacation. The district immediately organized a teacher recruitment fair and put the word out through the local media.

On the day of the fair, candidates for teaching jobs were lined up out the door, and officials from LBUSD were there, serving them soft drinks. Several television and radio stations and newspapers covered the fair, resulting in even more candidates - some who heard about the fair on the radio while commuting to work and decided to stop to apply. The result: Long Beach got the pick of the teaching litter.

"We have the challenge of being a large, urban school district growing by 3,000 students each year," says Richard Van Der Laan, the district's spokesperson. "We could have waited to implement CSR, but we didn't want to. We felt that, with a little ingenuity, we could get a high percentage of primary school kids into the program."

By the end of the first semester of the 1996-97 school year, 100 percent of Long Beach's first graders, 69 percent of the second graders and about 40 percent of the kindergartners were in classes of 20 and under. In total, about 16,000 students are involved in CSR.

How did Long Beach find the space? Like other districts, Long Beach brought in 40 portables and then went about "recapturing" any areas that could be used for classrooms. The district also decided to forgo small classes for subjects such as music and physical education--which freed rooms for other classes. The district even took back an old school it had been leasing to Los Angeles County and, today, the school is operating at 100 percent capacity.

"We had a number of principals and superintendents who were all supportive of making this thing happen," says Van Der Laan. "They were all convinced that our children shouldn't be left behind because of the inconvenience this might cause - we were deeply convinced that urban youngsters should get the same opportunities as children in other areas."

It didn't hurt that Long Beach, according to Van Der Laan, had an adequate reserve of money set aside. In fact, many of the portable classrooms had already been ordered before CSR was signed into law. Still, Van Der Laan insists, attitude was what made Long Beach successful: "Other places decided to wait and



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to think the program through but, in reality, the ones who stuck around the starting gate probably, in hindsight, should have jumped into it wholeheartedly."

From a National Perspective

Education has finally become an issue politicians from both parties are embracing. It's no secret that President Clinton is hoping to make improving education the defining issue of his second term. In California, Governor Wilson would like to expand CSR to the fourth grade. He is also talking about putting a \$ 2 billion statewide bond for education on the ballot next year.

If CSR programs prove to have a dramatic impact on reading and math skills in California, it is likely that CSR programs will expand to other states as well. The argument for CSR programs is appealing to politicians, and it's a notion hard to dispute: Our children will need better skills to compete in a global marketplace.

RELATED ARTICLE: HOW DO YOU TURN AN ELEMENTARY SCHOOL CAFETERIA AND AUDITORIUM INTO FOUR CLASSROOMS?

Last August, Valencia Park Elementary School in Fullerton quickly learned how. The school has an enrollment of 950 students or so, and the staff wanted to reduce the size of its first-grade classrooms before the school year began. The problem was that four additional classrooms were needed until the middle of the year, when more portable classrooms would be arriving.

As it happened, the school's cafeteria and auditorium occupied the same large room, with a stage at one end and the kitchen at the other. First, the decision was made that the cafeteria could be sacrificed. Lunch tables and benches were moved outside to the playground, which meant students began dining al fresco. When it rained, which wasn't often, "rainy day lunches" were declared, and students ate in their classrooms. To alleviate playground crowding, students were divided into three groups, each eating at a different time.

To convert the cafeteria/auditorium to a classroom, movable walls were used. Carpet was laid over the linoleum floors, and the walls were repainted or covered with murals of such things as schoolhouses and flowers painted on large pieces of paper. Three of the classrooms were used for first graders, and the fourth was used for an English as a second language classroom.

This begs the obvious question: Are these good-quality classrooms?

"We thought it looked very cozy and not sterile - like a cafeteria," says Michele Succar, the school's psychologist. "We were all very pleased, especially the teach-em. It was wonderful to have the 20-to-one."

But were first graders a little alarmed to be attending class in a cafeteria?

"Well, these are first graders," says Succar. "Most of them don't come with preconceived notions about what a classroom should look like, and I doubt it affected them. They were in a school classroom with good teachers and a warm, caring environment. And that's what's most important."



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RELATED ARTICLE: FIVE LESSONS FROM CALIFORNIA CSR

The following lessons can be learned from California's struggles and successes with CSR.

THINK AHEAD. Even if your district has adequate space, survey all buildings to see where and how, in a pinch, classrooms could be added at a later date. Also, view every inch of space as a potential classroom; temporary partitions can do wonders.

CSR ATTRACTS TEACHERS. Obviously, teachers love smaller classes. Districts like Long Beach and Mammoth used the promise of CSR to sell themselves to teachers and, as a result, the demand was greater than the supply. Both districts feel they greatly enhanced their staffs by hiring skilled and experienced teachers.

MONEY OFTEN FOLLOWS RESULTS. Schools that achieve CSR by any means possible have something to sell to the public when the inevitable bond ends up on the ballot. Jan Hintzman, of the San Diego school district, says that she wanted to wait a year and study the numbers before implementing CSR. The district didn't wait, believing that the facilities the district lost to CSR were a worthwhile sacrifice: Give the community smaller classes, and the community will then pass the next school bond issue.

BE MEDIA SAVVY. "If there's something negative going on, all the press comes out," says Sandra Herrera of the Oxford School District. "If it's something good, we can't get them to come out, even if we buy ads in the paper. It's a continuing frustration."

One strategy widely used in dealing with the press is going to the press before it comes to you, which the Long Beach district did to great effects when it held a job fair to recruit new teachers. Keep in mind, too, that reporters at small newspapers often tend to be young and inexperienced. Introduce yourself to them. Invite them to your office to talk about the issues maybe lunch with them once a month. And, hard as it might be, don't take offense when they write something that angers you or, perhaps, is dead wrong. Their readers are the people who vote for bonds and politicians.

BE A LEADER. "Hopefully, **class size** reduction will help people see the need for additional facilities," says Van Der Laan. "And there is a growing awareness that, if we are going to get into the 21st century, we still need to finish getting into the 20th century. Our thinking is that, if you decide to do it, find a way. Do it sooner rather than later. Be a leader rather than a follower."

RELATED ARTICLE: THE "AVERAGE" SCHOOL DISTRICT

A major study conducted in 1995 by McKinsey & Company, Inc. describes the "average" school district in the United States as having:

- * 5.7 schools per district, (*)
- * 533 students per school, (*)
- * 25 students per class, (*) and



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* 121.4 classes per district. (**)

This means that the "average" school district would have to add 30.4 classrooms in order to bring its **class-size** average down to 20 students. While the "average" school district doesn't exist in most places, some interesting extrapolations can be made from the data when combined with typical **class sizes** in each state.

Assuming that the "average" district does exist in each state, it would have to add the indicated number of classrooms in order to achieve the 20 students per classroom standard set by California (see the third column in the chart below).

Based on these figures, California is in the worst shape, needing to add 48.2 classrooms to the "average" district while Nebraska, Vermont and South Dakota are already at or below the 20 student goal.

Obviously, this simplified analysis leaves out many factors. Dozens of other considerations, including increasing enrollment, differences in student populations in specific grades and the actual size of a district, impact the number of classrooms needed.

- Tim Bete, editor

42 states
25 states

State	Average Elementary Class Size (***)	New Classrooms Needed per "Average" District
R California	29.3	48.2
R Utah	27.5	41.4
R Michigan	27.3	40.6
D Maryland	26.3	36.4
D Florida	26.0	35.1
D Washington	25.9	34.6
R Arizona	25.8	34.1
R Pennsylvania	25.2	31.3
R Ohio	25.0	30.4
Delaware	24.8	29.4
North Carolina	24.8	29.4



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School Planning and Management July, 1997

Colorado	24.7	28.9
Illinois	24.5	27.9
Minnesota	24.5	27.9
Kentucky	24.4	27.4
Nevada	24.4	27.4
Oregon	24.4	27.4
Tennessee	24.4	27.4
Idaho	24.0	25.3
New York	23.9	24.8
Missouri	23.7	23.7
Hawaii	23.6	23.2
Mississippi	23.6	23.2
South Carolina	23.3	21.5
New Jersey	23.2	21.0
Rhode Island	23.2	21.0
Massachusetts	23.1	20.4
Wisconsin	23.1	20.4
Louisiana	22.9	19.2
Alaska	22.6	17.5
Virginia	22.6	17.5
Iowa	22.5	16.9
Georgia	22.2	15.1
Indiana	21.9	13.2
New Mexico	21.9	13.2
District of Columbia	21.8	12.5
New Hampshire	21.8	12.5
Alabama	21.7	11.9



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School Planning and Management July, 1997

Maine	21.5	10.6
Connecticut	21.4	9.9
Montana	21.2	8.6
Arkansas	21.0	7.2
Wyoming	21.0	7.2
West Virginia	20.9	6.5
North Dakota	20.7	5.1
Kansas	20.6	4.4
Oklahoma	20.5	3.7
Texas	20.1	0.8
Nebraska	20.0	0.0
Vermont	19.7	n/a
South Dakota	19.2	n/a

* Calculated from data from the National Center for Education Statistics.

** Calculated by Tim Bete from McKinsey data.

*** U.S. Department of Education, National Center for Education Statistics, Schools and Staffing Survey, 1993-94. Table 39-2: Public school teachers' average **class size**, by teacher level and state: School year 1993-94.

Steve Hyman is a California-based freelance writer.

GRAPHIC: Photograph; Table; Illustration

LANGUAGE: ENGLISH



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LEVEL 2 - 2 OF 22 STORIES

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October 13, 1997

SECTION: U.S. NEWS; Pg. 22

LENGTH: 3005 words

HEADLINE: Does **Class Size** Matter?

BYLINE: By Thomas Toch; Betsy Streisand; Steven Butler

DATELINE: Tokyo

HIGHLIGHT:

The newest trend can transform **schools**--or waste billions of dollars;

BODY:

There are so many students crammed into P.S. 14 in Queens, N.Y., that lunch is split into three shifts beginning at 10:25 a.m. To manage the traffic of 1,700 students, many of them recent immigrants from Latin America and South Asia, each grade level has its own designated exit door. An art studio and a science lab have been sacrificed for use as regular classrooms. Until two years ago, many students spent exercise periods in their classrooms because the **school's** gym was being used for regular studies. Dancing the macarena at their desks counted as physical education.

Most important, the size of P.S. 14's classes affects the way Rehana Longi teaches and the way her students learn. Angling her body to squeeze between desks, she struggles, unsuccessfully, to give each of her 34 fifth-grade students a few minutes of individual attention. During a 35-minute arithmetic lesson, she gets to check the answers of about 12 students. Creativity is limited. "There's a lot of emphasis on textbooks," she says. "It's got to be that way."

Not for many children in California. In Los Angeles's Hancock Park Elementary School, teacher Sandy Sutton spots one of the 20 students in her second-grade class struggling with a reading task. "Sssttttiicckk," Sutton says, helping the girl sound out the word. Sutton says the shy kids in her class don't fade into the background as they once did. She can pinpoint slow readers within the first days of school and give them special attention. She can cover more ground during each class period.

In the past, Sutton routinely taught classes of 31 or 32 students and faced difficulties similar to Longi's. But last year the **size** of Sutton's **class** was cut under a wildly popular initiative pushed by Republican Gov. Pete Wilson to reduce the **size of classes** statewide in kindergarten through third grade. Sutton, for one, is thrilled at the change. "If I ever had to go back to that, I'd quit teaching," she declares.

The **class-size** cuts have already changed the look and feel of California's



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schools, where nearly an eighth of the nation's students are enrolled. In slightly over a year, the state has created at least 17,000 new classes and over half of the state's 1.9 million eligible students have been placed in classes of no more than 20 students. (In recent years California has had classes averaging 30 students.) Parents overwhelmingly say that smaller classes have increased their children's reading and writing skills. Perhaps most amazingly, parents in Beverly Hills and other affluent enclaves have begun shifting allegiances to public schools, in part because they are now guaranteed small classes similar to those offered by private schools.

As a result of the **class-size** initiative, Wilson's approval ratings are now the highest he has enjoyed. Democrats in the state legislature are singing the reform's praises. Even the state's teachers' unions have been silenced by surveys showing that over 90 percent of their members believe the class cuts have improved instruction.

"Silver bullet." As President Clinton and Congress fight in Washington over the wisdom of using national exams to spur school improvement, California has found that this bold solution has forged a rare alliance of educators, Democrats, Republicans, unions, and taxpayers. And California's **class-size** trend seems to be spilling into other states. The Wisconsin Senate last month approved a plan to spend up to \$ 50 million to reduce average **class sizes** in poor areas to 18 students or fewer. The move is "a silver bullet, a sure-fire, proven way to improve the quality of education," says Democratic state Sen. Chuck Chvala. New York, North Carolina, and several other states also have passed class-shrinking measures recently, and another half dozen are debating such steps. The issue is expected to be the center of discussion during a special session of the Florida legislature this fall.

But there is one catch: Reducing **class size** is expensive. California is spending \$ 2.5 billion over two years to cut **class size**, and the annual cost of sustaining the reform will start at about \$ 1.5 billion (a 7.5 percent increase in state-level education spending) and rise steadily as new teachers climb salary ladders. To reduce the average **class size** by 10 students nationally would cost on the order of \$ 85 billion for teachers alone. But while the California approach is politically popular, across-the-board cuts in **class size** are not the most cost-effective way to spend education money. As the **class-size** crusade spreads to other states, the question of how the reform is implemented--who benefits and who doesn't--deserves scrutiny. Smaller classes could be one of the most important school reforms of recent years--or a colossal waste of money.

The popularity of the **class-size** initiative stems in part from the perception among parents that increases in education spending over the years haven't found their way into classrooms. On the one hand, public-education spending has increased by at least 61 percent beyond inflation during the past 30 years, and the bulk of the money has been spent on hiring new teachers. Yet the size of regular classrooms has dropped only slightly, largely because the majority of the new teachers work with small groups of disabled students and others with special needs. Wilson rallied support for his expensive initiative by saying he would give subsidies only to those schools that actually succeeded in reducing **class size**. To voters, smaller **classes** are "the single strongest rationale for spending more money on schools," says pollster Celinda Lake of Lake Sosin Snell Perry & Associates. Indeed, nearly 60 percent of parents surveyed in a new U.S. News poll say they'd be more likely to vote for a



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political candidate who wants to raise taxes if the money went to pay for smaller **class sizes** in kindergarten through third grade. The poll was designed for U.S. News by Democrat Lake with Republican pollster Ed Goeas.

In some regions, large classes are a serious problem. While the average elementary **class size** in the nation's public schools has declined from 30 to 25 over the past four decades, poor urban school systems continue to struggle with overflowing classrooms. So do schools in Florida and other booming Sun Belt states. The problem isn't likely to ease: Enrollment is expected to increase by 2 million students nationally during the next decade.

In deciding to invest so heavily in smaller classes, Wilson's advisers relied on the findings of an experiment in Tennessee called Project STAR, the nation's only large, long-term study of **class size**. In 1985, Tennessee put 6,500 kindergartners in 330 **classes** of different **sizes**. A third of the **classes** had between 13 and 17 students; a third had between 22 and 26 students, the typical size of classrooms in the state; and a third had enrollments of 22 to 26 students plus a full-time teacher's aide. The students in small classes stayed in them for four years and then returned to larger ones in the fourth grade. The test scores and behavior of students in the small classes were better than those of kids in the larger classes. For instance, 69 percent of first graders in smaller classes passed the state's reading test, compared with 58 percent of students in larger groups. Teachers said students who had been in the smaller classes also paid closer attention, asked more questions, and had fewer discipline problems. They even participated more in school clubs and generally became more engaged in school life.

But the benefits that the Tennessee study found in smaller classes are easily squandered if implementation isn't handled properly. California, in reducing **class size**, might be lowering the quality of teaching. School districts have had to find teachers for the 18,000 new slots; as a result, nearly two thirds of the new hires have little or no teaching experience. In Los Angeles, new teachers have included Nordstrom clerks, a former clown, and several chiropractors. The state needs to hire 15,000 more teachers in the next 10 months. While some of the new blood may be good, education experts like Michael Kirst of Stanford University believe that the quality of many new hires is suspect--and the schools may be stuck with bad teachers for many years. Urban schools with a lot of tough-to-educate kids are suffering the most. Not only is it difficult to lure new teachers into the inner city but many of their best veterans are departing for openings created by the **class-size** initiative in often higher-paying and less stressful suburbs.

While students may be getting more attention, new teachers may be getting less. The California State University system, which trains 60 percent of the state's teachers, will start offering courses needed for teaching licenses over the Internet in January. Teachers-in-training will be able to earn a semester's course credit using a textbook and a 4 1/2-hour video of classroom techniques.

Some schools have resorted to steps that directly undermine the potential value of the **class-size** initiative. Last year many schools placed 40 students in single rooms with two teachers; in others, two teachers traded off teaching the entire group of 40 students. Some schools have even assigned three classes to two rooms, with each class rotating in and out during the day. "It was a nightmare," says Teri Ortt, a second-grade teacher at Hobart Elementary School

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in Los Angeles who was in such a "troika" system last year. "Teachers were constantly packing up their students and teaching materials, grabbing two hours of class time in the library or outside under a tree."

Breathing room. Smaller classes and more teachers require more classrooms than California schools can currently provide. Hundreds of schools have given up libraries and science labs for class space. Others have discontinued preschool and parent-education programs for lack of room. At Hancock Park, two third-grade classes are set up in the school's auditorium. Statewide, schools are parking portable classrooms on their playgrounds as fast as they can purchase them; more than 7,000 are already on back order. Several thousand of the portables in place are hastily constructed "temporary" structures that state law permits schools to use for only two years.

Many crowded inner-city schools--including 57 schools in Los Angeles--don't have room even for portables, however, and are thus unable to fully reduce **class sizes**. The state's richer suburban school systems, on the other hand, have room to expand and are reducing **class sizes** for a greater percentage of their students, officials say. Once the cost of new construction is considered, the true cost of the **class-size** initiative may be far higher than now projected.

Beyond the practical difficulties of introducing **class-size** cuts on a California-like scale, there is a more fundamental question: Is the effort to make this initiative broadly popular wasting money on students and schools where the impact will be minimal? All parents want their children in small classes, but the Tennessee STAR study found that smaller classes helped disadvantaged students, many of whom were African-American, more than they helped affluent students. Black students in the larger first-grade classes scored 14 percent below whites on a key reading test, but the gap narrowed to 4 percent in the smaller classes. A major study of **class size** to be released this fall by Rand of Santa Monica, Calif., reaches a similar conclusion: Smaller classes benefit students from low-income families most, middle-class kids less, and those from upper-income backgrounds least of all.

Efforts to reduce **class size** are more cost effective if focused on certain subjects. It makes more sense, experts say, to have larger groups during instruction in subjects such as music and to create smaller groupings during the teaching of reading, the most important elementary school subject. Over 700 schools have done just that as part of a reading program called Success for All, and the achievement results have been impressive. Robert Slavin, the Johns Hopkins University professor who developed the approach, says California could have improved instruction in its elementary schools dramatically for a fraction of the money it has spent simply by hiring and carefully training retired teachers and other part-timers as reading instructors to reduce the **size of classes** during the time reading is taught.

States that shrink **class size** by only a few students across the board will probably be throwing their money down the drain. Studies have shown that benefits become measurable only if classes are cut by a third or more--and even then such cuts may make only a marginal difference in affluent areas. Yet the 141,000-student Palm Beach County, Fla., school system just spent nearly \$ 6 million hiring 220 teachers to reduce **class sizes** in kindergarten through 12th grade by about one student per class. Part of the reason Tennessee succeeded was that its schools got STAR classes down to the very low average of 15 (often low-income) students--and even then many researchers considered the actual



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improvements in test scores to be modest, given the reform's cost. The new Rand study also suggests that there's more benefit to reducing **class sizes** in early elementary grades than in middle schools and high schools.

Reducing **class size** seems to be most effective in combination with other reforms. Evidence comes from a study of 16 low-income schools in Austin, Texas. In the late 1980s, each of the schools was awarded an extra \$ 300,000 a year for five years as part of a desegregation case. Fourteen of the schools spent the money to reduce **class size** and yet in five years didn't manage to improve student attendance or test scores. But the other two schools reduced **class size**, set higher standards, provided intensive teacher training, and established health clinics on their grounds to address physical problems that were keeping students from learning. Test scores and attendance both improved significantly at those schools.

Money is also wasted if classes get smaller but teachers don't adjust their styles. Yet teachers in schools that have cut **class sizes** often continue to use large-class techniques like relying on textbooks, instead of working directly with students, says Nikola Filby, a researcher at WestEd, a San Francisco-based think tank.

Japanese style. In fact, schools can get many of the benefits of smaller classes, without the cost, by making classes seem small. In Japan, where classes often include as many as 40 students, teachers involve students without relying on one-on-one contact by frequently asking small groups of students to present their findings to the entire class. They build self-discipline among students by giving them responsibilities like calling the class to order after recess. Japanese schools work hard to build bonds between teachers and students, devoting as many as 30 days a year to hiking excursions, festivals, and other activities, says Catherine Lewis, author of *Educating Hearts and Minds*, a study of Japanese schools. (Japan is, however, concerned that its education system discourages creativity and independent thinking, and a government panel recently recommended that the average **class size** of 29 students be lowered to help teachers nurture students' talents.)

In this country, Catholic schools, which have earned a reputation for doing a good job educating disadvantaged urban students, often have classes of over 30 students. They compensate with high expectations, traditional teacher lecturing, and a strong sense of community that makes kids feel cared about. And P.S. 14 shows that bulging big-city schools can work: A sense of order pervades the school, and teacher morale is surprisingly high.

Educationally, using smaller classes selectively produces the biggest dividends. It frees up money to spend on other reforms that dollar for dollar have produced greater increases in student achievement, such as high-quality teacher training and peer tutoring. Unfortunately, a targeted approach may undermine the political effectiveness of reducing **class size**. An instructive analogy is Social Security. It is arguably an incredibly inefficient way of reducing poverty among the aged because so many middle- and upper-income families benefit. Yet because the program was designed to be universal--helping seniors regardless of background--it has enjoyed broad support for decades. The **class-size** initiative may prove to be similar. California's approach may be an inefficient but reasonable compromise between what's substantively ideal and what's politically possible.

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Class sizeStates with largest and smallest average **class sizes** in 1993-94

LARGEST		SMALLEST	
state	students per class	state	students per class
1. California	30.1	1. Vermont	20.4
2. Maryland	28.7	2. S. Dakota	20.7
3. Utah	28.7	3. Kansas	21.0
4. Washington	28.6	4. Montana	21.5
5. Florida	27.7	5. Arkansas	21.6

Source: U.S. Dept. of Education

Future shock

Enrollment in the nation's schools is expected to grow by 2 million students during the next decade, making smaller classes tougher to achieve.

Students K-12

[Data for chart is not available.]

Number of teachers

[Data for chart is not available.]

Source: U.S. Dept. of Education

GRAPHIC: Picture, Crowd control. Rehana Longi's fifth-grade class at P.S. 14 in Queens has 34 kids. Giving attention to individuals is difficult. (Photography by Kenneth Jarecke--Contact for USN&WR); Picture, Close encounters. Sandra Kessler teaches her third-grade class at Carpenter Avenue Elementary School in Studio City, Calif. The class now has fewer than 20 students. (Photography by Kenneth Jarecke--Contact for USN&WR); Picture, Teacher school. California has hired 16,700 new teachers, including chiropractors and a former clown. Here, some trainees get instruction at the Lanai Road Elementary School in L.A. (Photography by Kenneth Jarecke--Contact for USN&WR); Picture, A popular reform. Shrinking **class size** has proved wildly popular. But the reform is most effective when targeted to low-income students, and when used for teaching reading. (Photography by Kenneth Jarecke--Contact for USN&WR)

LANGUAGE: ENGLISH

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LEVEL 2 - 1 OF 22 STORIES

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U.S. News & World Report

November 17, 1997

SECTION: OUTLOOK; UPDATE; Pg. 5

LENGTH: 430 words

HEADLINE: **Class size:** a cutting edge issue?

BYLINE: By Kent Jenkins Jr.

BODY:

Republican James S. Gilmore was elected governor of Virginia last week after a campaign dominated by his promise to cut an unpopular tax on cars. But a second issue, whose impact went largely unnoticed, also played a key role in the victory: Gilmore's promise to reduce the **size of classes** in elementary schools.

It is an idea whose political appeal is growing greater. In California, as reported by U.S. News ("Does **Class Size** Matter?" October 13), Gov. Pete Wilson has already won wide acclaim for a program to reduce **class size**. But Gilmore went even further, turning **class size** into a partisan issue. Don Beyer, the Democrat who lost to Gilmore, had campaigned under the slogan "Education First!" He proposed to improve education by significantly raising teachers' salaries--a notion that Virginians had supported in the past. By contrast, Gilmore promised to give teachers only a cost-of-living raise--and to apply the savings to hiring new teachers.

Virginia Democrats and Republicans both say their polls found that Gilmore's approach proved more popular with voters than Beyer's. This was particularly significant--and surprising--because support for education traditionally has been one of the great political strengths of the Democratic Party.

M. Boyd Marcus, a senior strategist for Gilmore, said he believes that even though the GOP candidate's proposed tax cut was hugely popular, taxes alone would not have turned the election. "[The **class-size** initiative] opened people's eyes and ears and showed them this guy was serious about education," said Marcus.

Gilmore's success could give the issue a big national boost with the GOP, which is seeking new ideas on education. Clinton Key, executive director of the Republican Governors Association, said he is certain that the question of **class size** will surface at the group's annual meeting later this month. The session will focus on education.

In Congress, reducing the **size of classes** may well attract GOP lawmakers who have had little success winning broad public support for such complex proposals as quasi-independent "charter schools" or taxpayer-funded vouchers that subsidize private-school tuition. Several Republican strategists say that class reduction is especially appealing because it is easy to understand and reflects



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common sense. The idea offers extra political appeal for Republicans with its emphasis on limiting teacher raises. That is one political gesture that won't be lost on the National Education Association, which has long been strongly Democratic.

GRAPHIC: Picture, A class issue for voters (Kenneth Jarecke--Contact for USN&WR)

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LEVEL 1 - 196 OF 201 STORIES

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SECTION: Vol. 34 ; No. 1 ; Pg. 152; ISSN: 0095-2583

LENGTH: 9439 words

HEADLINE: The influence of classroom characteristics on high school teacher turnover.

BYLINE: Mont, Daniel ; Rees, Daniel I.

BODY:

I. INTRODUCTION

A number of authors have suggested that the U.S. will face a shortage of qualified teachers in the near future, especially in the areas of math and science. (1) **School** districts facing such a shortage could respond in a variety of ways. For instance, hiring standards could be lowered, teachers could be asked to teach outside their areas of certification, or, funds permitting, starting salaries could be increased in an effort to attract the most promising candidates.

Still another option would be to raise teaching loads (i.e., average **class size** or the number of **classes** taught), thus making do with fewer teachers. This option is particularly alluring in light of the fact that average **class size** has been falling rapidly in the U.S. over the last twenty years, and yet no strong connection between smaller classes and increased student learning has been established. (2)

There is, however, a possible hidden cost that needs to be investigated before recommending such a course of action. If teachers respond to larger or more frequent classes by quitting, then a district that tries to solve its hiring problems in this fashion could simply be increasing its demand for new teachers.

This paper uses data from the New York State Education Department's Personnel Master File for the years 1979 to 1989 in order to investigate whether an increased teaching load affects the likelihood that a teacher will leave his or her district. In order to obtain an unbiased sample of job lengths, the sample is restricted to full-time high school teachers who were newly hired in 1979. (3) We estimate a discrete-time hazard model in which teaching load is measured as the average **class size** taught by an individual, the number of classes taught, and the proportion of classes taught in the teacher's certified area. In interpreting our results we pay special attention to whether the behavior of math and science teachers differs from that of other teachers. This is an important issue because shortages of qualified teachers in these two areas



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are predicted to be especially acute.

II. BACKGROUND

The market for teachers differs from a well-functioning neoclassical labor market in that salaries are determined through a political process involving various levels of government, the public, and often teachers unions.(4) If the demand for teachers increases as retirements and student enrollment increase, then starting salaries cannot be counted on to quickly move to the market-clearing level, and thus a shortage of teachers becomes a possibility.(5) Few observers, however, believe that there will be an actual shortage of warm bodies. The more likely scenario is that there will be a lack of teachers trained in specific areas and of high-quality teachers in general (see Murnane et al. 1991,1-2).

Given a limited budget, what are the options available to a school district facing this type of shortage? The district could settle for hiring lower quality teachers, but this might be seen as an unnecessary measure, with long-term implications, taken in response to what could be a temporary situation. Another option that has been suggested is to increase teacher workloads.(6) Whether this option is workable depends, in part, on the exit decisions of teachers.

A large number of empirical studies have investigated the determinants of teacher turnover. However, no work specifically directed toward capturing the effect of increased teaching responsibilities on turnover has been done.(7) Without knowing whether such an effect exists, and what the magnitude of it might be, informed policy decisions at the district level in response to a shortage of qualified teachers becomes impossible.

Past studies have shown that the probability of a teacher leaving his or her job is high in the first few years after entering the profession, falls after the third year,(8) and again increases as the teacher nears retirement age (Murnane et al. 1991, 5963 ; Eberts 1987 ; Greenberg and McCall 1974). It is possible that as shortages materialize districts will be more reluctant to fire marginal teachers when they come up for tenure. Certainly the opposite is true: declining student enrollments during the 1970s led to increased terminations of younger teachers (Murnane 1981).

Higher salaries are another factor associated with greater retention of teachers (Rees 1991 ; Murnane and Olsen 1989; 1990 ; Baugh and Stone 1982). The effect of increased salaries is especially pronounced for beginning teachers (Murnane et al. 1991, 71-75).

Studies by Murnane et al. 1991, 67-71 and Murnane and Olsen 1990; 1989 have emphasized the role of outside opportunities in a teacher's decision to leave the profession. They find that higher teacher test-scores are associated with a greater likelihood of leaving, and that high school physics and chemistry teachers are more likely to leave than their colleagues in other areas. These results suggest the possibility that increased teaching responsibilities could drive out those teachers who are the most difficult to replace.(9)

Finally, factors associated with unionization seem to affect teacher exit behavior. Eberts 1987 shows that teacher turnover is reduced by the presence of layoff and **class size** provisions in the collective bargaining agreement. He argues that these provisions acted as guarantees against layoffs, and so are



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viewed as a type of job benefit. Rees 1991 finds that stronger grievance procedures are associated with a lower probability of quitting, and argues that a union "voice effect" on quits is responsible. Both of these lines of research point to the importance of union rules and institutions in the exit decisions of teachers. Indeed, where there exist strong contract provisions with regard to the maximum number of hours in a day or students in a class, it would be difficult for a district to increase teaching loads in response to a shortage of qualified teachers. (10)

III. THE DATA

Data for this study were primarily drawn from the New York State Education Department's Personnel Master File. (11) Every year the New York Education Department surveys all public school teachers in New York State, asking a wide range of questions having to do with personal characteristics and working conditions. Each teacher is assigned an ID that is constant across years, so it is possible to collect information on a teacher over the course of his or her career.

Our sample consists of 525 individuals, all of whom were newly hired by a district outside of New York City in the fall of 1979. (12) Only full-time academic teachers with pupils in grades 9 through 12 were included in the sample. (13)

A job separation was defined as a teacher leaving his or her district. Teachers were defined as having left their original 1979 school district if they did not appear in the Personal Master File for two years running, or if their district code changed and did not change back in the next year. It is common for teachers to take a leave of absence or a sabbatic. Therefore an absence of two years instead of one was used to indicate a separation. (14) In fact, many teachers in the sample were absent for one year and then returned to teaching in the same district. Those teachers who were not separated from their original district were followed until 1987, at which time they were right-censored. (15)

IV. EMPIRICAL ANALYSIS

Survival Analysis

A discrete hazard model was estimated to determine the correlates of teacher job turnover. This model provides estimates for the probability of experiencing a job separation conditional on the number of years employed. For example, it estimates the probability of experiencing a job separation in one's third year of job tenure conditional on still being employed in that third year.

More formally, a discrete-time hazard rate at time f is defined as

$$P_{\text{sub}.it} = \text{Prob} (T_{\text{sub}.i} = t \mid T_{\text{sub}.i} \text{ greater than or equal to } t, X_{\text{sub}.it})$$

where $T_{\text{sub}.i}$ is the period job i terminates, and $X_{\text{sub}.it}$ is a vector of explanatory variables. It can be shown that the log likelihood function for estimating a discrete-time hazard rate is simply

Mathematical Expression Omitted



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where y_{it} equals one if a separation occurs at time t and zero otherwise, and t_i is the final period in which job i is observed. (16)

Since the above likelihood function is simply the likelihood function for the ordinary regression analysis of a limited dependent variable, it can be estimated using a standard maximum likelihood logit program. The only difference is that a unit of observation is no longer a job per se, but a job-year. (17)

Survival analysis was used previously to determine teacher job separations by Murnane and Olsen 1989; 1990, Willet and Singer 1988, Mark and Anderson 1978; 1985, and Whitener 1965, but these studies lacked information on class characteristics other than subject specialties.

Quits vs. Layoffs

There are basically two types of separations--involuntary and voluntary. The determinants of job quits versus job layoffs can be similar or quite different. We expect age to be correlated with fewer quits (as predicted by job-matching models) as well as fewer layoffs (as predicted by models with specific human capital or seniority), at least prior to retirement years. However, there are other variables, for example **class size**, that may act differently on quits than on layoffs. Smaller **class sizes** might be desirable and thus lessen quits. However, smaller **class sizes** might mean a school district's population is shrinking and it requires fewer teachers and so increases layoffs. Unfortunately, as in other studies of teacher turnover (Murnane and Olsen 1989; 1990, Eberts 1987, Grissmer and Kirby 1987, and Murnane 1981) quits and layoffs can not be distinguished. This muddies the analysis, but the issue will be addressed at least partially by taking into account the institution of tenure within the teaching profession.

The Explanatory Variables

Economic research on quit behavior typically begins with the assumption that workers compare the expected utility from staying at their current job with the expected utility that could be realized at the next best alternative. Ideally, then, one would like to have information on current working conditions and pecuniary rewards, and at least some proxies for these variables at alternative jobs.

Because of data limitations, most empirical studies have employed only broad (school or district level) measures of working conditions at the current job. Our specification, however, includes a number of teacher-specific variables relating to current working conditions. Those of primary interest are average **class size** (CSIZE), number of **classes** taught (CNUMBER), and the proportion of classes taught in the teacher's certified area (CERT). They serve as measures of the amount of stress, preparation time, and grading time involved in class room teaching. Also included in the vector X_{it} is a variable representing the average quality of students taught by a teacher (AQUAL).

In addition to the above measures, we employ a number of district-level explanatory variables, such as high school enrollment, the dropout rate, the percentage of students who go on to college, the percentage of white students, and the percentage of households in the district with children. These variables



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are intended as indirect measures of working conditions at the current job. (18) Other district-level explanatory variables can be thought of as indicators of the availability and/or desirability of alternative employment, as well as influencing conditions at the current job. Median household income and the percentage of residents who live in an urban area fall into this category. (19)

We use starting salary as our measure of the expected pecuniary returns to remaining at the current job. Thus, following Finnie and Mont 1991 and Meitzen 1986, the entire salary projection path is conceptually collapsed into one variable. A number of teacher turnover studies have used current salary to measure the pecuniary returns to remaining on the job. This alternative approach yielded similar results to those reported below. (20)

Finally, previous work has shown that many personal characteristics such as age, sex, and job tenure influence job separations, both for workers in general (Finnie and Mont 1991, Light and Ureta 1990, Meitzen 1986) and teachers in particular (e.g., Jacobsen and Sweet 1982, Greenberg and McCall 1974). A group of personal variables was therefore included in the empirical specification, although race and ethnic background variables were not available. A list of all independent variables employed in this study can be found in Table I. Means and standard deviations are shown in Table II.

TABLE I

Variable Definitions

From the New York State Education Department's Personnel Master File, 1979-1989

Time Varying:

CNUMBER number of classes taught

CERT percent of classes taught in area of certification

AQUAL AQUAL is the average of a "quality of students" variable for each class taught.

The "quality of students" variable for each class is coded as follows:

1 = below average

2 = average

3 = above average

Class quality was determined by the teacher.

CSIZE average class size

CSIZESQ CSIZE squared

BELOW a dummy variable equal to one if a teacher's average class size is



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below the

mean **class size** of the sample

ABOVE a dummy variable equal to one if a teacher's average **class size** is above the

mean **class size** of the sample

YR1 dummy equal to one if the first year on this job

YR456 dummy equal to one if the fourth, fifth, or sixth year on the job

YR789 dummy equal to one if the seventh, eighth, or ninth year on the job

(note: the ninth year is the last year observed)

Time Invariant:

FEMALE dummy variable equal to one if female

SALARY starting salary in thousands of \$ 1979

AGE age in years

EXPER years of teaching experience prior to starting the observed job

PHD dummy variable equal to one if teacher holds a Ph.D.

From the NYS Education Department's Institutional Master File, 1979-1987

Time Varying:

ENROLL the high school enrollment of the teacher's school district in thousands

PDROP the percentage of high school students in a teacher's school district that drop

out of school each academic year

P4YEAR the percentage of high school seniors in a teacher's school district that graduate

and go on to attend a four year college

PWHITE percentage of high school students in a teacher's school district that are white



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From the 1980 Census of the Population: School District File

Time Invariant:
 PURBAN percentage of residents in a teacher's school district that live in an
 urban area PHHWC percentage of families in a teacher's school district that
 have children MHI79 The median household income of residents in a teacher's
 school district in 1979,
 in thousands of 1979 dollars

TABLE II

Sample Means

(standard deviations in parentheses)

	Mean
FEMALE	0.631
	(0.48)
SALARY	14.988
	(4.63)
AGE	31.966
	(8.03)
CNUMBER	5.013
	(0.81)
CERT	0.983
	(0.10)
PHD	0.013
	(0.11)
EXPER	7.295
	(6.43)
AQUAL	2.035
	(0.45)



CSIZE 20.763

(4.77)

CSIZESQ 453.839

(192.70)

YR1 0.156

(0.36)

YR456 0.215

(0.41)

YR789 0.126

(0.33)

ENROLL 1.285

(3.24)

PDROP 0.027

(0.02)

P4YEAR 0.172

(0.20)

PWHITE 0.742

(0.22)

PURBAN 0.507

(0.47)

PHHWC 0.679

(0.09)

MH179 19.753

(5.86)

n = 1362

Results



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Initially we divided the sample according to whether an individual taught in the math and sciences or in another discipline. A log-likelihood ratio test indicated that very little is gained in explanatory power by dividing the sample along these lines.⁽²¹⁾ In other words, it would seem that the exit behavior of math and science teachers is not significantly different from their colleagues specializing in other academic areas. Thus the hazard model estimations, reported in Table III, are for the full sample of teachers. The first specification (column 1), which does not include district variables, is rejected at the 99 percent confidence level in favor of a specification in which district variables are included (column 2). This result indicates the importance of these variables as correlates of teacher attrition.

TABLE III

Hazard Estimation Results: Full Sample

	(1)	(2)
CONSTANT	1.338 (1.33)	1.384 (1.10)
FEMALE	-.202 (1.57)	-.324 (1.22)
SALARY	-.077 (**) (3.75)	-.069 (**) (2.34)
AGE	.032 (**) (2.44)	.051 (**) (3.37)
CNUMBER	-.073 (0.87)	-.061 (0.66)
CERT	-.983 (*) (1.76)	-.982 (*) (1.69)
PHD	.219 (.46)	.137 (0.23)
EXPER	-.020 (1.04)	-.079 (*) (1.69)
AQUAL	-.398 (**) (2.79)	-.803 (**) (4.97)



Economic Inquiry, January, 1996

CSIZE	-.091 (*)	-.217 (**)
	(1.81)	(2.96)
CSIZESQ	.0025 (**)	.0051 (**)
	(2.07)	(2.99)
YR1	1.490 (**)	.697
	(9.09)	(2.47)
YR456	.022	-.104
	(.12)	(0.52)
YR789	-.246	-.067
	(1.16)	(0.27)
ENROLL		-.007
		(0.27)
PDROP		5.888
		(1.15)
P4YEAR		-1.172
		(1.09)
PWHITE		-.602
		(1.15)
PURBAN		-.276
		(1.08)
PHHWC		-2.23 (*)
		(1.81)
MHI79		.054 (**)
		(2.11)
-2 Xlog likelihood	1758.01	1418.58
job endings	392	285
observations	2078	13262



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(*) significant at 90% confidence level

(**) significant at 95% confidence level
absolute t-statistics in parentheses

Student Quality. Student quality is found to be significantly linked to the probability of observing a separation. As indicated by the negative coefficient, higher levels of student quality lessened the probability of a teacher leaving. No rationale could be developed for why student quality would be linked to layoffs. District characteristics such as income are controlled for, and the sample does not include special education teachers who might experience a different susceptibility to budget cuts than regular teachers. Therefore, it is hypothesized that higher student quality diminished quits. Teaching students with higher abilities might be associated with different amount of flexibility and variability in curriculum, fewer disciplinary problems, or a different level of personal satisfaction.

Average Class Size. The estimated coefficients of average **class size** (CSIZE) and **class size** squared (CSIZESQ) indicate that at low average **class sizes**, cutting **class size** would increase turnover, and at high levels of average **class size** cutting **class size** would decrease turnover. The turning point, in fact, occurs at just about the sample mean. (22) One explanation for this could be that the first effect is a result of layoffs and the second effect is the result of quits. In other words, when **class sizes** shrink to very small levels positions are eliminated, but when **class sizes** get too big teachers quit because of poor working conditions. Since we are interested in the determinants of teacher retention vis-à-vis quits, this poses a problem.

One way to address this issue is to re-estimate the model separately for teachers with four or more years of experience and for teachers with less than four years of experience. All teachers in New York State who enter their fourth year of full-time permanent employment have tenure. It is very difficult to fire them, and they are less susceptible to layoffs than nontenured teachers. The coefficients for average **class size** and **class size** squared obtained using these subsamples (reported in Table IV) show no substantial difference from the results for the full sample. Although the tenured sample is not immune from layoffs, the results provide some support for the hypothesis that the observed effect of average **class size** is being driven by quits.

TABLE IV

Results from Sample Divided by Length of Job Tenure

	4 or more years (a)	Less than 4 years
CONSTANT	1.22 (0.81)	2.49 (0.83)
FEMALE	-.197	-1.01



	(1.11)	(1.40)
SALARY	-.062 (**) (2.27)	-.073 (*) (1.86)
AGE	.047 (**) (2.49)	.087 (**) (2.56)
CNUMBER	-.031 (0.29)	-.164 (0.73)
CERT	-.350 (0.46)	-2.479 (*) (1.65)
PHD	.078 (0.12)	1.48 (0.64)
EXPERIENCE	.025 (0.65)	-.851 (*) (3.21)
AQUAL	-.818 (4.20)	-.627 (*) (1.83)
CSIZE	-.124 (*) (1.94)	-.165 (**) (2.82)
CSIZESQ	.0047 (**) (2.43)	.0046 (**) (2.04) ,
YR789	-.012 (0.06)	NA (b)
ENROLL	-.012 (0.30)	.002 (**) (2.17)
PDROP	8.47 (1.36)	1.58 (0.12)
P4YEAR	-2.12 (*) (1.87)	4.52 (**) (3.62)
PWHITE	-.333	-2.495 (**)



	(0.46)	(3.03)
PURBAN	-.357	-.541
	(1.21)	(0.86)
PHHWC	-3.317(**)	5.376(*)
	(2.26)	(1.83)
MH179	.089(**)	-.002(**)
	(2.90)	(2.30)
-2 X log likelihood	556.83	626.7
job endings	88	207
observations	761	601

(*) significant at 90% confidence level

(**) significant at 95% confidence level

absolute t-statistics in parentheses

(a) The sample for this specification consists of only those teachers who were in the previous sample but did not experience a job separation prior to their fourth year of teaching. This means that all teachers in this sample are tenured. (b) not applicable for this sample.

To further investigate this issue, expected separation probabilities were estimated to examine the magnitude of the average **class size** effect above and below the turning point. Again, it turns out that this point is just below the sample mean in every case. Therefore, expected separation probabilities were computed using actual **class size**, and 60 percent, 80 percent, 120 percent and 140 percent of average **class size**. The expected separation probability estimated using actual **class size**, of course, preserves the sample mean.

The expected separation probabilities were estimated as follows: average **class size** was set equal to .6 x CSIZE and **class size** squared was set equal to the square of .6 x CSIZE for every observation in the sample used to estimate the model in column 2. Then the probability of observing a separation for every observation in the sample was computed using the parameter estimates in column 2. The mean of these probabilities is the predicted separation rate conditional on a 40 percent decrease in average **class size**. The same method was used for the other levels of average **class size**.

These results are presented in Table V. They demonstrate that the practical



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significance of the average **class size** effect is much larger above the mean (when increases in average **class size** are associated with a higher probability of a job separation) than they are below the mean (when increases in average **class size** are associated with a lower probability of a separation). Increasing average **class size** by 40 percent is predicted to increase the separation rate from .209 to .349, an increase of 67 percent. Decreasing average **class size** by 40 percent only increases the separation rate from .209 to .218, an increase of less than 5 percent.

In Table VI, we split average **class size** and average **class size** squared into four variables, allowing for unrelated effects of average **class size** above and below the mean. The results in Table VI suggest that there is no significant relationship between average **class size** and the probability of a job separation when average **class size** is below the sample mean. A positive relationship between job separations and increases in average **class size** is found above the sample mean. Although the coefficient on the above-average **class size** variable is negative, it must be remembered that this variable is equal to zero for every observation where average **class size** is less than the sample mean. When average **class size** is equal to or above the sample mean, the combined effect of above-average **class size** and its square is such that an increase in average **class size** leads to an increase in the probability of a job separation. This supports the hypothesis that small **class sizes** are not associated with layoffs, but large **class sizes** are associated with quits. (23)

Number of Classes. There was no statistically significant correlation between the number of classes taught and turnover. Teachers with smaller class loads might have more administrative duties and thus may be more likely to leave their jobs for administrative positions, whereas teachers with very high class loads might leave their jobs looking for better working conditions. It may be that these two effects counterbalance each other, leading to no relationship between **class size** and turnover.

Proportion of **Classes** Taught in Area of Certification. Although there was not much variance in this variable, it still was found to be significantly correlated with the probability of separation. The probabilities reported in Table V suggest, holding other factors constant, that decreasing the percentage of classes taught in one's area of certification by 10 percent is likely to increase the job separation rate by approximately 3 percent. Once again, teaching out of one's certification area could either be considered a poor working condition that inspires quits, or a sign that one's skills are not those required by a school district, inspiring layoffs. However, very few teachers taught less than 80 percent of their classes in their area of certification, so even in the most extreme case most classes were being taught within a teacher's specialty. This combined with the negative coefficient of CERT in the model using only tenured teachers (see Table IV), seems to suggest that this may be more of a quit effect than a layoff effect.

TABLE VI

Allowing for Different Effects of **Class Size** above and
below Its Mean.^{sup.a}



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BELOW x CSIZE	-.087 (0.92)
BELOW x CSIZESQ	-.0033 (0.79)
ABOVE x CSIZE	-.217(**) (1.99)
ABOVE x CSIZESQ	.0053(**) (2.06)
-2 x log likelihood	1236.51
job endings	285
observations	1362

(*) significant at 90% confidence level

(**) significant at 95% confidence level

absolute t-statistics in parentheses

(a) Other coefficients suppressed

TABLE V

Mean Probability of Job Separation.sup.a

Baseline.sup.b	.209
Year 1	.331
Years 2-3	.229
Years 4-6	.167
Years 7-9	.091
Females	.198
Males	.230



.6 x Average Class Size	.218
.8 x Average Class Size	.214
Actual Average Class Size.sup.C	.209
1.2 x Average Class Size	.242
1.4 x Average Class Size	.349
.8 x Salary	.261
.9 x Salary	.246
Actual Salary.sup.c	.209
1.1 x Salary	.196
1.2 x Salary	.183
.8 x % Classes in Certification Area	.227
.9 x % Classes in Certification Area	.216
Actual % Classes in Certification Area	.209

(a) The method for computing these mean probabilities is described in section IV.

(b) Baseline is computed by taking the average of the predicted probability of observing a job separation for each observation in the sample. This is equivalent to the percentage of observations experiencing a job separation, i.e. $285/1362 = .209$.

(c) Equivalent to the baseline.

Job Length. As predicted by standard job-matching models and as found in numerous other job separation studies, the probability of job separations decreases with job length (Finnie and Mont 1991, Meitzen 1986). (24) The expected separation probabilities generated for Table V predict that the turnover rate in the first year is .331. This drops to .229 for the next two years even before the tenure decision occurs. By years seven, eight, and nine, this drops further to .091. These predictions are in keeping with national statistics on teacher quit rates. (25)

Salary. As expected, higher salaries were associated with fewer quits. In the past there has been some conflicting evidence on the effect of salaries on



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teacher attrition. At least one study, Eberts 1987 , was unable to find a statistically significant relationship between salary and attrition rates, while other studies have found strong evidence of a negative relationship between salary and the probability that a teacher leaves his or her district (Murnane and Olsen 1989; 1990 ; Baugh and Stone 1982). Our estimates suggest that, holding other factors constant, a 10 percent increase in starting salaries would lower attrition rates by approximately 6 percent.

District Variables. Estimates from the full and tenured samples suggest that as median household income in a district rises, teachers are more likely to leave their job. This result might be ascribed to the availability of better non-teaching opportunities in higher-income districts. In the sample of teachers with less than four years of experience, the opposite relationship is found. For these newer teachers it is possible that working conditions associated with the higher-income districts may out weigh the more attractive non-teaching alternatives.

Other results also suggest that teachers with less than four years of experience are quite sensitive to changes in workplace conditions. For these teachers, the relationship between high school enrollment and the probability of separation is positive, a result perhaps indicative of the increased bureaucracy in larger districts. Also, an increase in the percentage of students who are white is associated with a decrease in turnover for these teachers.

The results with regard to the percentage of students entering a four-year college after graduation and the percentage of families with children are somewhat puzzling. In the non-tenured sample the relationship between these variables and the probability of separation is positive, whereas in the tenured sample it is negative. An explanation for this pattern of results may be that tenure standards at the schools with better students and a more supportive public are higher, but after having received tenure these qualities are associated with an easier, more rewarding job.

Personal Characteristics. Age was found to be positively associated with job turnover, although the large bulk of the sample was not near retirement. This result is contrary to what has been found for the population in general, and is even at odds with studies of teachers' turnover.(26) However, upon closer observation these results are in line with prior expectations. The interpretation of the age variable must be made in light of the fact that previous teaching experience is included in the estimation. Given the same previous teaching experience, an older teacher is likely to have more nonteaching experience and thus more nonteaching opportunities.

Previous teaching experience was found to be negatively related to the probability of job separation, as expected. The estimated coefficients for female teachers and Ph.D.s were not statistically significant.

V. CONCLUSION

We included classroom characteristics in an estimation of the job separation rate of teachers, and found these to be significant correlates of job separation. In particular, average **class size** was found to be positively associated with the job separation of high school teachers, although this effect begins to occur at roughly the mean average **class size** in the sample. Similarly,



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teaching outside one's area of certification was also associated with higher job separation rates. It is reasonable to conclude, therefore, that efforts to reduce education costs by increasing **class size** and asking teachers to teach outside their areas of certification may be undermined by increased teacher turnover. However, controlling for average **class size**, the number of **classes** taught seems to have no effect on teacher separation rates.

Separate estimations were conducted for science and math teachers and for teachers of other academic subjects. Log likelihood ratio tests do not support the hypothesis that science and math teachers' turnover is structurally different from that of other high school teachers.

The population of high school age children in New York State is predicted to rise 6.8 percent from 1995 to the year 2000 (New York State Council on Children and Families 1988). Without adjusting the number of teachers accordingly to maintain present average **class sizes**, the hazard function we estimate would predict a corresponding 7.2 percent increase in teacher turnover, from .209 to .224. (27) Our results suggest that to keep turnover rates constant without increasing teaching staff size would require an increase in starting salaries (and the corresponding salary scale for other teachers) by between 5 and 10 percent. In determining a cost-minimizing strategy, school districts will have to balance an increase in turnover costs with potential increases in labor costs.

There is an important caveat, however. Some teacher quits involve teachers moving to other districts, as opposed to leaving the profession. If all school districts raised salaries (or increased average **class size**, for that matter) the effect may not be as large as those predicted above. This is because the effects of higher salaries or **class sizes** estimated here reflect the impact of having a particular salary level or **class size** level relative to other districts. In order to more clearly address policy from a statewide or nationwide perspective, as opposed to a school district perspective, we would need data that enabled us to distinguish between teachers moving from one district to another and those leaving the profession altogether. Unfortunately, this information was not available to us. Therefore these estimates serve as an upper bound on teacher exit effects.

Nevertheless, we can conclude that class load variables, used here for the first time in a study of teacher job turnover, are important correlates of teacher attrition. Any future studies of teacher attrition or policy recommendations in this area should incorporate them into their analysis.

(1.) See, for instance, Murnane et al. 1991, 1-2 or Haggstrom et al. 1988, 2 . Predictions of teacher shortages are typically made on the basis of two facts: (1) the large cohort of teachers hired during the 1950s and 1960s is reaching retirement age, and (2) public school enrollment is rising as the children of the baby boomers enter and advance through the school system. (2.) According to a report by the National Education Association 1987, 34 , the mean number of pupils taught per day by secondary and departmentalized elementary teachers fell from 134 in 1971 to 97 in 1986.

See Hanushek 1989 for a review of the literature in this area. Hanushek identified 152 studies in which the teacher/pupil ratio was used as an explanatory variable in an education production function. Of these 152 studies



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only 14 found a statistically significant positive relationship between the teacher/pupil ratio and student achievement. (3.) The sample was restricted to newly hired teachers in order to assure a random sample of job spells. The unit of analysis in hazard rate estimation is the job spell, not the teacher, per se (see Lancaster 1990 , Allison 1984 , Cox and Oakes 1984 , Kalbfleisch and Prentice 1980). Selecting a sample consisting of aR job spells currently in process in a given year oversamples long spells, and creates a non-random sample of job lengths. This type of sample is sometimes referred to as a stock, as by Lancaster 1990 , or straddled sample, as by Sheps and Menken 1973 . If, for example, job tenure had no effect on termination rates whatsoever (i.e., an exponential distribution), a stock sample would have job lengths on average twice as long as a random sample of job lengths (Lancaster 1990, 95). It is for this reason that only new hires were sampled (i.e., a flow sample that is random in job lengths) instead of all teachers employed in 1979. (4.) See Fogel and Lewin 1974 for a general discussion of public sector wage determination. Also see Ehrenberg and Schwarz 1986 . (5.) Weaver 1983, 5-19 identifies two twenty-year periods (1908-1928 and 1950-1970) in which there were general shortages of qualified teachers. Shortages of math and science teachers seem to be more frequent. Avoiding shortages in these areas

will inevitably require some form of
differentiating salary incentives...The resistance
to this solution will likely come from the
teaching profession itself...Merit pay and
other forms of differential compensation,
apart from seniority and credentials, have
had, to say the least, a less than enthusiastic
response from organized teacher groups

(Weaver 1983, 124). (6.) For instance, according to Weaver 1983, 80 ,
i n the short term, adjustment m average
class size is the most probable policy action
in response to a teacher shortage because
of its direct and immediate effect...budget

savings. (7.) Rees 1991 found a small but positive effect of **class size** on the probability that a teacher left his or her district. His sample, however, included elementary as well as secondary school teachers. Because **class size** could potentially mean quite different levels of stress and effort for these two groups, it is not clear how to interpret his results. Also, Rees did not include a measure of the number of classes taught in his estimations which could have led to biased results. (8.) Tenure decisions are generally made at the end of a teacher's third year. (9.) Our data permit us to test if an increased teaching



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load has a particularly adverse impact on the retention of science teachers. However, because we have no test-score data, we cannot examine whether there is an interaction between "ability" and teaching load. (10.) In addition to the factors discussed in this section, personal and community characteristics have also been shown to be important determinants of teacher attrition. All teachers in this sample are unionized. (11.) Other data sources are detailed in Table 1. (12.) Some teachers arrived with experience from private schools or other public school districts. The rules governing inter-district movement within the New York City school system are unique, and it is for this reason that New York City teachers were excluded from the sample. (13.) Teachers specializing in physical, special, and industrial education, the fine arts, and various types of non-academic fields were excluded from the sample. Full-time was defined as a teacher who taught four or more classes in 1979 and was reported to be working at least 80 percent of a full work load. (14.) Models were estimated using a one-year absence as a job separation as well. The results were not significantly different from those reported below. Since some of these absent teachers re-appeared the following year (e.g., returning from a sabbatic) two-year absences were our preferred definition for a job separation. (15.) Determining if a teacher left his or her district in 1987 actually required examining the 1988 and 1989 Personnel Master Files. (16.) Some observed job spells were still in progress at the end of the sampling frame. That is, the beginning of the job was observed but not its ending. According to Lancaster 1990 these "right censored" observations do not typically lead to bias or consistency problems. (17.) It can be shown that estimates from the discrete-time hazard model are also estimates of the underlying continuous-time proportional hazard model. For the derivation of this log likelihood function and a discussion of its properties, see Allison 1982 . For a good introduction to survival analysis in general see Allison 1984 . For more formal treatments, see Lancaster 1990 , Cox and Oakes 1984 , and Kalbfleisch and Prentice 1980 . (18.) The percentage of households with children may be positively related to the level of support a school system receives from the community it serves. (19.) Of the district variables, the percentage of residents living in an urban area, the percentage of households with children, and median household income are time invariant and refer to 1979. (20.) The estimated coefficient of the salary variable changed from $-.069$ to $-.081$. The estimated coefficients and t-statistics of the other explanatory variables in the model did not change appreciably. (21.) This test was performed at a 95 percent confidence level. (22.) The turning point for the model with district variables is 20.98. The sample mean for **class size** for this sample is 20.76. The turning point for the model without the district variables is slightly below the mean at 18.2. (23.) Another way of trying to disentangle quit from layoff effects would be to split the sample into those districts with growing enrollments and those with declining enrollments. Districts with growing enrollments presumably face fewer layoff pressures. Unfortunately, the large majority of school districts in New York had falling enrollments over this time period and so this strategy was not used. Instead, a variable was constructed equalling the percent change in district enrollments over the time period. This variable was included in the analysis and interacted with **CSIZE** and **CSIZESQ**, (average **class size** and **class size** squared). The estimated coefficients of all three terms were negative, a result consistent with the hypothesis that there are fewer terminations when enrollments increase (or decrease less). However, only the coefficient of the percent change variable was statistically significant. The results with regard to the other explanatory variables in the model did not appreciably change.



Another possible criticism of this basic finding is that **class size** is endogenous. For instance, it may be that popular teachers draw large enrollments and are also more likely to be happy and well liked by administrators. This source of endogeneity would most likely mitigate against finding a positive relationship between **class size** and teacher turnover. (24.) Hazard functions with dummy variables for each year (one through nine) were also estimated. However, a log likelihood test failed to reject the restricted models reported in Table III. (25.) According to Grissmer and Kirby 1987, 38-39, at two years after entry just under 40 percent of all teachers have left their district, as compared to approximately 48 percent in our data. That is, $.331 + (1.331) .229 = .484$. (26.) For instance, Eberts 1987, 18 found a negative relationship between turnover and age until a teacher approached his or her fortieth birthday. (27.) A simulation was run similar to those reported in Table V with CSIZE and CSIZESQ being allowed to grow by 6.8 percent.

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Making BIG SCHOOLS SMALLER

By Timothy B. Berkey
From *The High School Magazine*

RESearch on the relationship between size of the school population and students' academic performance is inconclusive and fails to establish any clear implication for educators to follow. Public perception, however, appears to be married to the notion that students will be more successful in schools with smaller student populations. With this intuitive hunch unvalidated by research, educational leaders find themselves pressured into making decisions to use scarce financial resources to build smaller or additional school buildings rather than focusing on programs and initiatives that make significant improvements in teaching and learning.

In my five years as Principal and Assistant Superintendent at Adlai E. Stevenson High School, in the Chicago suburb of Lincolnshire, Illinois, we've grown from 2,100 to over 3,000 students and participated in a suc-

cessful referendum campaign that expanded the campus to accommodate future growth to a school of 4,000 by the turn of the century.

My experience is that size of school population has little to do with potential enhancements to be made by investing resources in school programs and initiatives that will have direct impact on academic, personal, and social development of students. Bricks and mortar won't change schools; people and programs will.

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Therefore, to deal with public fear of large schools—and more important, create successful school environments—we must look for ways to make big schools smaller. A cornerstone of making big schools smaller is to design a restructured organization that captures the individual attention provided to students in small schools while taking advantage of the rich and broad opportunities that present themselves in large school programs.

We introduced a school-within-a-school arrangement. We organized a 21-member transition task force made up of students, parents, teachers, and administrators to examine other school-within-a-school models and identify key elements that would meet the needs of our organization. Here are some of the features we found important in our design:

- Establish zoned areas of campus called "houses" in which students take the majority of their core subjects while also allowing for movement to other houses for electives or courses not available within one's house.

- Provide additional travel time only for students who need to move to a classroom outside their house. There is no need to put the entire school in the hallways for additional travel time.

- Allow students access to their friends regardless of house assignment. For example, although we have two cafeterias, students can use either one to meet with friends assigned to other houses.

- Give teachers the opportunity to determine their own assignments. Some of our teachers prefer to stay

within a given house while others like to teach in a second location.

- Avoid creating artificial barriers between each house. Students and staff are not looking for separation but for the continuation of a sense of unity. We did not divide our athletic teams, student government, or clubs based on the school-within-a-school arrangement.

- Locate student services within each house. We have assigned counselors, deans, and social workers to students within a given house. Siblings are assigned to the same house to maintain close relationships between families and student-services personnel.

Student Services

A frequent criticism of large schools is that students will go unnoticed and "fall between the cracks," an understandable concern of parents who have watched their child experience difficulty in school and get little or no attention from school personnel. The key to providing effective student services is in the monitoring process.

This process can begin prior to the first day of school for entering freshmen. During the spring, our counselors meet with junior-high and middle-school personnel to identify students who are experiencing academic, social, or personal problems and therefore need to be monitored closely as they enter high school.

As they enroll in our school, each student is assigned to a student support team consisting of a guidance counselor, dean, and social worker. The team meets on a regular basis and

reviews academic, behavioral, and personal/social information about students assigned to them.

Appropriate strategies are discussed and formulated with a lead person within the team designated to carry out the plan and report back at the next meeting. Team members contact parents and, when necessary, involve outside agencies and resources to assist the student. Teachers, support staff members, and administrators are encouraged to report any important information about students to the appropriate student support team.

Drop-in service is available to all students throughout the day. A word of caution, however—make sure the secretarial staff get the name of any student who stops by when everyone is busy or out of the office. It's important to know immediately who may need assistance.

Academic Support Services

Academic support services are also important. Remember the good old days when grades were reported every six weeks? Somewhere along the line, administrators got the bright idea that nine-week grading periods would be less costly and more efficient. Teachers rallied around this idea as they saw an opportunity to reduce some of the voluminous paperwork that comes with the job. Did anyone think about the impact on students and parents? Probably not.

Several years ago, we made the decision to go back to six-week periods with a progress report at each interim. Every three weeks, parents

get feedback about the academic performance of their students.

Once a problem is identified, be ready to put a series of support services in place. At Stevenson, we have developed a progression of tutorial services to assist students with their studies:

- Resource centers staffed by teachers, peer tutors, and community volunteers who can provide daily tutoring throughout the school day;

- Guided study halls where students can get help in a small group arrangement rather than in a large study hall;

- Mentor programs for students who need instruction in study skills and academic intervention.

If these services fail to bring about improved results, the student is targeted for a full case study for possible special education services.

The results of these services have been outstanding. Not only have we reduced the dropout/failure rate for the entire school population, we have been able to help students by intervening at a much earlier stage of a problem.

As schools become larger, teachers begin to feel isolation from their colleagues as common lunch and preparation times become less frequent. Important sharing among teachers of similar curricula can suffer unless the school pays close attention to the need for people to meet. There are several ways to accomplish this:

- Provide shortened school days for teachers to meet for a couple of hours before the students arrive;

- Arrange for substitute coverage

when a group of teachers needs a large block of time to resolve issues or complete special projects;

- Fund curriculum team proposals that allow teachers to meet on weekends or during summer months.

Although you will never be able to resolve all the concerns teachers express about lack of meeting time, placing designated times in the school calendar is a step toward building a greater sense of teamwork and collegiality in a large school environment.

Staff Development

This brings us to the area of staff development. For many years, schools have used a menu approach in their staff development programs, allowing teachers to independently select items of interest from a list that is usually determined by some type of needs assessment.

The problem with this approach is that teachers miss the opportunity to work together to integrate their new knowledge and skills in common areas of instruction. In large school environments, it becomes even more problematic with teachers going in so many different directions that staff development becomes an activity rather than a meaningful experience that finds its way back into the classroom.

Three years ago, we decided to provide teachers with the opportunity to select a strand from our staff development as a curriculum team or department instead of as an individual. The vast majority of teachers took us up on the offer and decided to use the team approach.

The results have been amazing. Not only have teachers integrated their new skills in the classroom, our students have set new academic records for virtually every internal and external indicator monitored by the school.

Cocurricular Offerings

The most frequent complaint you will hear from parents as a school grows is about the cocurricular program. Students who get cut from an athletic team or don't get the lead in the school play can be dramatic examples of the negative aspects of growth unless you plan and prepare for improvements in your cocurricular offerings.

Several years ago, we created a special task force to study our athletic, fine arts, club, and intramural opportunities and devise a plan to at least maintain the percentage of students involved in cocurriculars as the school grows.

Here are some of the strategies that were suggested:

- Create a pyramid of teams for each sport that involves a try-out and cut roster approach. For example, it made sense for us to run multiple levels of soccer, baseball, and basketball in grades 9 and 10.

- Provide more intramural activities and allow the programs to share in the use of athletic facilities.

- Support involvement in community service projects by providing bus transportation and adult supervision after school.

- Identify a process for students to start a new club or organization within the school. ▶

This brings me to the subject of parent partnerships. It has always surprised me how many parents drop off their children at our school but rarely step inside our schoolhouse doors. I don't believe this is a function of apathy but more of lack of familiarity with a large school campus. To overcome this, I recommend inviting them into the school.

I don't mean open house. Ask parents to meet with you while school is in session. Throughout the school year, I invite every ninth-grade parent to join me for a meeting, tour of campus, and lunch in the student cafeteria.

After all, if you want to relieve the anxiety parents may be feeling about the size of the school, show them the busiest place on campus. Not all of my parents come to the luncheons, but those who do walk away as partners of a campus that reflects a calm, organized, and friendly environment conducive to learning.

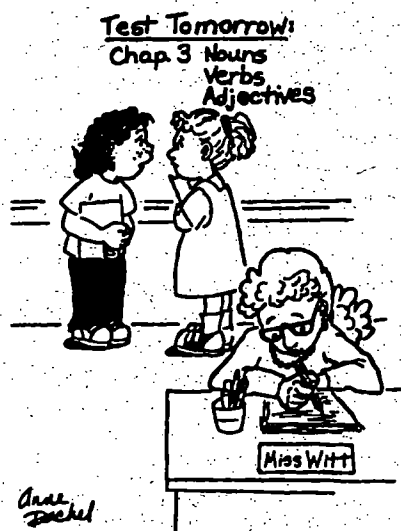
Defrosting the Look

A final area for consideration is building aesthetics. How many of us have walked into school facilities and immediately felt the cold and impersonal message left by a lack of attention to aesthetics? This problem becomes magnified in large buildings with numerous entrances and hallways that look institutional instead of friendly.

Our students, teachers, and parents have enjoyed working together on projects that have enhanced the physical environment of the school: flags of the United Nations hung in

the student cafeteria, student art galleries, framed art posters of famous works, displays of school memorabilia and historical artifacts, student and professional murals, and enlarged pictures of everyday student life.

You can take decisive action to overcome the potential impact of large school size by focusing district efforts on strategies that will remove school size as a key issue in your restructuring and school improvement efforts. By paying close attention to the needs of students, parents, and staff, you can transform your school into a friendly and nurturing environment where each member of the school family takes ownership in success. **ED**



"It gets worse. In high school, you learn this all over again—in other languages!"

TOUGHER DISCIPLINE, SAFER SCHOOLS

By Mike Rose
From *American Teacher*

It should come as no surprise that Corpus Christi, Texas, was one of the first districts to make good use of a new Texas law that gives teachers the right to permanently remove chronically disruptive students from the classroom—a law which the Corpus Christi American Federation of Teachers (CCAFT), the Texas Federation of Teachers, and other AFT locals in the state had lobbied hard for. This district has quietly been building a reputation as a leading-edge system when it comes to student discipline.

Most agree that the process began two years ago, when the district established a task force to study discipline problems in the middle schools. Largely as a result of the task force's recommendations, and the publicity it generated surrounding discipline issues, Corpus Christi has gone on to implement alternative learning centers for violent and disruptive youths and to establish a student code of conduct that is one of the best in the nation.

Corpus Christi became the first district in Texas to formally endorse the AFT's nationwide campaign for

high standards of achievement and conduct, "Responsibility, Respect, Results: Lessons for Life." Perhaps the most important asset the community brings to the fight, explains CCAFT president Linda Bridges, is a willingness to tackle discipline problems head-on and to look for new opportunities to improve.

"It wasn't that long ago that a former superintendent stood up before the school board and said, 'If there is a discipline problem in this district, then it's the teachers who are to blame.' We're clearly beyond that denial stage now," Bridges says. "People are starting to feel that orderly schools are within reach, and the momentum is clearly driving us in that direction."

School board vice president Dot Adkins says her service as board representative on the middle school task

Mike Rose is Assistant Editor, *American Teacher*, published by the American Federation of Teachers, Washington, D.C. Condensed from *American Teacher*, 80 (February 1996), 10-12.

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HEADLINE: What matters most: a competent teacher for every child.

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The report of the National Commission on Teaching and America's Future offers a blueprint for recruiting, preparing, supporting, and rewarding excellent educators in all of America's **schools**, according to Ms. Darling. Hammond. For the details, read on.

We propose an audacious goal . . . by the year 2006, America will provide all students with what should be their educational birthright: access to competent, caring, and qualified teachers.(1)

With these words, the National Commission on Teaching and America's Future summarized its challenge to the American public. After two years of intense study and discussion, the commission - a 26-member bipartisan blue-ribbon panel supported by the Rockefeller Foundation and the Carnegie Corporation of New York - concluded that the reform of elementary and secondary education depends first and foremost on restructuring its foundation, the teaching profession. The restructuring, the commission made clear, must go in two directions: toward increasing teachers' knowledge to meet the demands they face and toward redesigning **schools** to support high-quality teaching and learning.

The commission found a profession that has suffered from decades of neglect. By the standards of other professions and other countries, U.S. teacher education has historically been thin, uneven, and poorly financed. Teacher recruitment is distressingly ad hoc, and teacher salaries lag significantly behind those of other professions. This produces chronic shortages of qualified teachers in fields like mathematics and science and the continual hiring of large numbers of "teachers" who are unprepared for their jobs.

Furthermore, in contrast to other countries that invest most of their education dollars in well-prepared and well-supported teachers, half of the education dollars in the United States are spent on personnel and activities outside the classroom. A lack of standards for students and teachers, coupled with schools that are organized for 19th-century learning, leaves educators without an adequate foundation for constructing good teaching. Under these



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conditions, excellence is hard to achieve.

The commission is clear about what needs to change. No more hiring unqualified teachers on the sly. No more nods and winks at teacher education programs that fail to prepare teachers properly. No more tolerance for incompetence in the classroom. Children are compelled to attend school. Every state guarantees them equal protection under the law, and most promise them a sound education. In the face of these obligations, students have a right to competent, caring teachers who work in schools organized for success.

The commission is also clear about what needs to be done. Like the Flexner report that led to the transformation of the medical profession in 1910, this report, *What Matters Most: Teaching for America's Future*, examines successful practices within and outside the United States to describe what works. The commission concludes that children can reap the benefits of current knowledge about teaching and learning only if schools and schools of education are dramatically redesigned.

The report offers a blueprint for recruiting, preparing, supporting, and rewarding excellent educators in all of America's schools. The plan is aimed at ensuring that all schools have teachers with the knowledge and skills they need to enable all children to learn. If a caring, qualified teacher for every child is the most important ingredient in education reform, then it should no longer be the factor most frequently overlooked.

At the same time, such teachers must have available to them schools and school systems that are well designed to achieve their key academic mission: they must be focused on clear, high standards for students; organized to provide a coherent, high-quality curriculum across the grades; and designed to support teachers' collective work and learning.

We note that this challenge is accompanied by an equally great opportunity: over the next decade we will recruit and hire more than two million teachers for America's schools. More than half of the teachers who will be teaching 10 years from now will be hired during the next decade. If we can focus our energies on providing this generation of teachers with the kinds of knowledge and skills they need to help students succeed, we will have made an enormous contribution to America's future.

The Nature of the Problem

The education challenge facing the U.S. is not that its schools are not as good as they once were. It is that schools must help the vast majority of young people reach levels of skill and competence that were once thought to be within the reach of only a few.

After more than a decade of school reform, America is still a very long way from achieving its educational goals. Instead of all children coming to school ready to learn, more are living in poverty and without health care than a decade ago. (2) Graduation rates and student achievement in most subjects have remained flat or have increased only slightly. (3) Fewer than 10% of high school students can read, write, compute, and manage scientific material at the high levels required for today's "knowledge work" jobs. (4)



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This distance between our stated goals and current realities is not due to lack of effort. Many initiatives have been launched in local communities with positive effects. Nonetheless, we have reached an impasse in spreading these promising efforts to the system as a whole. It is now clear that most schools and teachers cannot produce the kind of learning demanded by the new reforms - not because they do not want to, but because they do not know how, and the systems they work in do not support their efforts to do so.

The Challenge for Teaching

A more complex, knowledge-based, and multicultural society creates new expectations for teaching. To help diverse learners master more challenging content, teachers must go far beyond dispensing information, giving a test, and giving a grade. They must themselves know their subject areas deeply, and they must understand how students think, if they are to create experiences that actually work to produce learning.

Developing the kind of teaching that is needed will require much greater clarity about what students need to learn in order to succeed in the world that awaits them and what teachers need to know and do in order to help students learn it. Standards that reflect these imperatives for student learning and for teaching are largely absent in our nation today. States are just now beginning to establish standards for student learning.

Standards for teaching are equally haphazard. Although most parents might assume that teachers, like other professionals, are educated in similar ways so that they acquire common knowledge before they are admitted to practice, this is not the case. Unlike doctors, lawyers, accountants, or architects, all teachers do not have the same training. Some teachers have very high levels of skills - particularly in states that require a bachelor's degree in the discipline to be taught - along with coursework in teaching, learning, curriculum, and child development; extensive practice teaching; and a master's degree in education. Others learn little about their subject matter or about teaching, learning, and child development - particularly in states that have low requirements for licensing.

And while states have recently begun to require some form of testing for a teaching license, most licensing exams are little more than multiple-choice tests of basic skills and general knowledge, widely criticized by educators and experts as woefully inadequate to measure teaching skill.⁽⁵⁾ Furthermore, in many states the cutoff scores are so low that there is no effective standard for entry.

These difficulties are barely known to the public. The schools' most closely held secret amounts to a great national shame: roughly one-quarter of newly hired American teachers lack the qualifications for their jobs. More than 12% of new hires enter the classroom without any formal training at all, and another 14% arrive without fully meeting state standards.

Although no state will permit a person to write wills, practice medicine, fix plumbing, or style hair without completing training and passing an examination, more than 40 states allow districts to hire teachers who have not met basic requirements. States pay more attention to the qualifications of the veterinarians treating America's pets than to those of the people educating the



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nation's youngsters. Consider the following facts:

* In recent years, more than 50,000 people who lack the training required for their jobs have entered teaching annually on emergency or substandard licenses. (6)

* Nearly one-fourth (23%) of all secondary teachers do not have even a minor in their main teaching field. This is true for more than 30% of mathematics teachers. (7)

* Among teachers who teach a second subject, 36% are un-licensed in that field, and 50% lack a minor in it. (8)

* Fifty-six percent of high school students taking physical science are taught by out-of-field teachers, as are 27% of those taking mathematics and 21% of those taking English. (9) The proportions are much greater in high-poverty schools and lower-track classes.

* In schools with the highest minority enrollments, students have less than a 50% chance of getting a science or mathematics teacher who holds a license and a degree in the field in which he or she teaches. (10)

In the nation's poorest schools, where hiring is most lax and teacher turnover is constant, the results are disastrous. Thousands of children are taught throughout their school careers by a parade of teachers without preparation in the fields in which they teach, inexperienced beginners with little training and no mentoring, and short-term substitutes trying to cope with constant staff disruptions. (11) It is more surprising that some of these children manage to learn than that so many fail to do so.

Current Barriers

Unequal resources and inadequate investments in teacher recruitment are major problems. Other industrialized countries fund their schools equally and make sure there are qualified teachers for all of them by underwriting teacher preparation and salaries. However, teachers in the U.S. must go into substantial debt to become prepared for a field that in most states pays less than any other occupation requiring a college degree.

This situation is not necessary or inevitable. The hiring of unprepared teachers was almost eliminated during the 1970s with scholarships and loans for college students preparing to teach, Urban Teacher Corps initiatives, and master of arts in teaching (MAT) programs, coupled with wage increases. However, the cancellation of most of these recruitment incentives in the 1980s led to renewed shortages when student enrollments started to climb once again, especially in cities. Between 1987 and 1991, the proportion of well-qualified new teachers - those entering teaching with a college major or minor and a license in their fields - actually declined from about 74% to 67%. (12)

There is no real system for recruiting, preparing, and developing America's teachers. Major problems include:

Inadequate teacher education. Because accreditation is not required of teacher education programs, their quality varies widely, with excellent programs



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standing alongside shoddy ones that are allowed to operate even when they do an utterly inadequate job. Too many American universities still treat their schools of education as "cash cows" whose excess revenues are spent on the training of doctors, lawyers, accountants, and almost any students other than prospective teachers themselves.

Slipshod recruitment. Although the share of academically able young people entering teaching has been increasing, there are still too few in some parts of the country and in critical subjects like mathematics and science. Federal incentives that once existed to induce talented people into high-need fields and locations have largely been eliminated.

Haphazard hiring and induction. School districts often lose the best candidates because of inefficient and cumbersome hiring practices, barriers to teacher mobility, and inattention to teacher qualifications. Those who do get hired are typically given the most difficult assignments and left to sink or swim, without the kind of help provided by internships and residencies in other professions. Isolated behind classroom doors with little feedback or help, as many as 30% leave in the first few years, while others learn merely to cope rather than to teach well.

Lack of professional development and rewards for knowledge and skill. In addition to the lack of support for beginning teachers, most school districts invest little in ongoing professional development for experienced teachers and spend much of these limited resources on unproductive "hit-and-run" workshops. Furthermore, most U.S. teachers have only three to five hours each week for planning. This leaves them with almost no regular time to consult together or to learn about new teaching strategies, unlike their peers in many European and Asian countries who spend between 15 and 20 hours per week working jointly on refining lessons and learning about new methods.

The teaching career does not encourage teachers to develop or use growing expertise. Evaluation and tenure decisions often lack a tangible connection to a clear vision of high-quality teaching, important skills are rarely rewarded, and - when budgets must be cut - professional development is often the first item sacrificed. Historically, the only route to advancement in teaching has been to leave the classroom for administration.

In contrast, many European and Asian countries hire a greater number of better-paid teachers, provide them with more extensive preparation, give them time to work together, and structure schools so that teachers can focus on teaching and can come to know their students well. Teachers share decision making and take on a range of professional responsibilities without leaving teaching. This is possible because these other countries invest their resources in many more classroom teachers - typically constituting 60% to 80% of staff, as compared to only 43% in the United States - and many fewer nonteaching employees. (13)

Schools structured for failure. Today's schools are organized in ways that support neither student learning nor teacher learning well. Teachers are isolated from one another so that they cannot share knowledge or take responsibility for overall student learning. Technologies that could enable alternative uses of personnel and time are not yet readily available in schools, and few staff members are prepared to use them. Moreover, too many people and



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resources are allocated to jobs and activities outside of classrooms, on the sidelines rather than at the front lines of teaching and learning.

High-performance businesses are abandoning the organizational assumptions that led to this way of managing work. They are flattening hierarchies, creating teams, and training employees to take on wider responsibilities using technologies that allow them to perform their work more efficiently. Schools that have restructured their work in these ways have been able to provide more time for teachers to work together and more time for students to work closely with teachers around more clearly defined standards for learning. (14)

Goals for the Nation

To address these problems, the commission challenges the nation to embrace a set of goals that will put us on the path to serious, long-term improvements in teaching and learning for America. The commission has six goals for the year 2006.

- * All children will be taught by teachers who have the knowledge, skills, and commitment to teach children well.
- * All teacher education programs will meet professional standards, or they will be closed.
- * All teachers will have access to high-quality professional development, and they will have regularly scheduled time for collegial work and planning.
- * Both teachers and principals will be hired and retained based on their ability to meet professional standards of practice.
- * Teachers' salaries will be based on their knowledge and skills.
- * High-quality teaching will be the central investment of schools. Most education dollars will be spent on classroom teaching.

The Commission's Recommendations

The commission's proposals provide a vision and a blueprint for the development of a 21st-century teaching profession that can make good on the nation's educational goals. The recommendations are systemic in scope - not a recipe for more short-lived pilot and demonstration projects. They describe a new infrastructure for professional learning and an accountability system that ensures attention to standards for educators as well as for students at every level: national, state, district, school, and classroom.

The commission urges a complete overhaul in the systems of teacher preparation and professional development to ensure that they reflect current knowledge and practice. This redesign should create a continuum of teacher learning based on compatible standards that operate from recruitment and preservice education through licensing, hiring, and induction into the profession, to advanced certification and ongoing professional development.

The commission also proposes a comprehensive set of changes in school organization and management. And finally, it recommends a set of measures for



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ensuring that only those who are competent to teach or to lead schools are allowed to enter or to continue in the profession - a starting point for creating professional accountability. The specific recommendations are enumerated below.

1. Get serious about standards for both students and teachers. "The Commission recommends that we renew the national promise to bring every American child up to worldclass standards in core academic areas and to develop and enforce rigorous standards for teacher preparation, initial licensing, and continuing development."

With respect to student standards, the commission believes that every state should work on incorporating challenging standards for learning - such as those developed by professional bodies like the National Council of Teachers of Mathematics - into curriculum frameworks and new assessments of student performance. Implementation must go beyond the tautology that "all children can learn" to examine what they should learn and how much they need to know.

Standards should be accompanied by benchmarks of performance - from "acceptable" to "highly accomplished" so that students and teachers know how to direct their efforts toward greater excellence.

Clearly, if students are to achieve high standards, we can expect no less from teachers and other educators. Our highest priority must be to reach agreement on what teachers should know and be able to do in order to help students succeed. Unaddressed for decades, this task has recently been completed by three professional bodies: the National Council for Accreditation of Teacher Education (NCATE), the Interstate New Teacher Assessment and Support Consortium (INTASC), and the National Board for Professional Teaching Standards (the National Board). Their combined efforts to set standards for teacher education, beginning teacher licensing, and advanced certification outline a continuum of teacher development throughout the career and offer the most powerful tools we have for reaching and rejuvenating the soul of the profession.

These standards and the assessments that grow out of them identify what it takes to be an effective teacher: subject-matter expertise coupled with an understanding of how children learn and develop; skill in using a range of teaching strategies and technologies; sensitivity and effectiveness in working with students from diverse backgrounds; the ability to work well with parents and other teachers; and assessment expertise capable of discerning how well children are doing, what they are learning, and what needs to be done next to move them along.

The standards reflect a teaching role in which the teacher is an instructional leader who orchestrates learning experiences in response to curriculum goals and student needs and who coaches students to high levels of independent performance. To advance standards, the commission recommends that states:

- * establish their own professional standards boards;
- * insist on professional accreditation for all schools of education;
- * close inadequate schools of education;



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- * license teachers based on demonstrated performance, including tests of subject-matter knowledge, teaching knowledge, and teaching skill; and

- * use National Board standards as the benchmark for accomplished teaching.

2. Reinvent teacher preparation and professional development. "The Commission recommends that colleges and schools work with states to redesign teacher education so that the two million teachers to be hired in the next decade are adequately prepared and so that all teachers have access to high-quality learning opportunities."

For this to occur, states, school districts, and education schools should:

- * organize teacher education and professional development around standards for students and teachers;

- * institute extended, graduate-level teacher preparation programs that provide yearlong internships in a professional development school;

- * create and fund mentoring programs for beginning teachers, along with evaluation of teaching skills;

- * create stable, high-quality sources of professional development - and then allocate 1% of state and local spending to support them, along with additional matching funds to school districts;

- * organize new sources of professional development, such as teacher academies, school/university partnerships, and learning networks that transcend school boundaries; and

- * make professional development an ongoing part of teachers' daily work.

If teachers are to be ready to help their students meet the new standards that are now being set for them, teacher preparation and professional development programs must consciously examine the expectations embodied in new curriculum frameworks and assessments and understand what they imply for teaching and for learning to teach. Then they must develop effective strategies for preparing teachers to teach in these much more demanding ways.

Over the past decade, many schools of education have changed their programs to incorporate new knowledge. More than 300 have developed extended programs that add a fifth (and occasionally a sixth) year of undergraduate training. These programs allow beginning teachers to complete a degree in their subject area as well as to acquire a firmer grounding in teaching skills. They allow coursework to be connected to extended practice teaching in schools - ideally, in professional development schools that, like teaching hospitals in medicine, have a special mission to support research and training. Recent studies show that graduates of extended programs are rated as better-prepared and more effective teachers and are far more likely to enter and remain in teaching than are their peers from traditional four-year programs. (15)

New teachers should have support from an expert mentor during the first year of teaching. Research shows that such support improves both teacher



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effectiveness and retention. (16) In the system we propose, teachers will have completed initial tests of subject-matter and basic teaching knowledge before entry and will be ready to undertake the second stage - a performance assessment of teaching skills - during this first year.

Throughout their careers, teachers should have ongoing opportunities to update their skills. In addition to time for joint planning and problem solving with in-school colleagues, teachers should have access to networks, school/university partnerships, and academies where they can connect with other educators to study subject-matter teaching, new pedagogies, and school change.

The benefit of these opportunities is that they offer sustained work on problems of practice that are directly connected to teachers' work and student learning.

3. Overhaul teacher recruitment and put qualified teachers in every classroom. "The Commission recommends that states and school districts pursue aggressive policies to put qualified teachers in every classroom by providing financial incentives to correct shortages, streamlining hiring procedures, and reducing barriers to teacher mobility."

Although each year the U.S. produces more new teachers than it needs, shortages of qualified candidates in particular fields (e.g., mathematics and science) and particular locations (primarily inner city and rural) are chronic.

In large districts, logistics can overwhelm everything else. It is sometimes the case that central offices cannot find out about classroom vacancies, principals are left in the dark about applicants, and candidates cannot get any information at all.

Finally, it should be stressed that large pools of potential mid-career teacher entrants - former employees of downsizing corporations, military and government retirees, and teacher aides already in the schools - are for the most part untapped.

To remedy these situations, the commission suggests the following actions:

- * increase the ability of financially disadvantaged districts to pay for qualified teachers and insist that school districts hire only qualified teachers;

- * redesign and streamline hiring at the district level - principally by creating a central "electronic hiring hall" for all qualified candidates and establishing cooperative relationships with universities to encourage early hiring of teachers;

- * eliminate barriers to teacher mobility by promoting reciprocal interstate licensing and by working across states to develop portable pensions;

- * provide incentives (including scholarships and premium pay) to recruit teachers for high-need subjects and locations; and

- * develop high-quality pathways to teaching for recent graduates, mid-career changers, paraprofessionals already in the classroom, and military and government retirees.



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4. Encourage and reward knowledge and skill. "The Commission recommends that school districts, states, and professional associations cooperate to make teaching a true profession, with a career continuum that places teaching at the top and rewards teachers for their knowledge and skills."

Schools have few ways of encouraging outstanding teaching, supporting teachers who take on the most challenging work, or rewarding increases in knowledge and skill. Newcomers who enter teaching without adequate preparation are paid at the same levels as those who enter with highly developed skills. Novices take on exactly the same kind of work as 30-year veterans, with little differentiation based on expertise. Mediocre teachers receive the same rewards as outstanding ones. And unlicensed "teachers" are placed on the same salary schedule as licensed teachers in high-demand fields such as mathematics and science or as teachers licensed in two or more subjects.

One testament to the inability of the existing system to understand what it is doing is that it rewards experience with easier work instead of encouraging senior teachers to deal with difficult learning problems and tough learning situations. As teachers gain experience, they can look forward to teaching in more affluent schools, working with easier schedules, dealing with "better" classes, or moving out of the classroom into administration. Teachers are rarely rewarded for applying their expertise to the most challenging learning problems or major needs of the system.

To address these issues, the commission recommends that state and local education agencies:

- * develop a career continuum linked to assessments and compensation systems that reward knowledge and skill (e.g., the ability to teach expertly in two or more subjects, as demonstrated by additional licenses, or the ability to pass examinations of teaching skill, such as those offered by INTASC and the National Board);

- * remove incompetent teachers through peer review programs that provide necessary assistance and due process; and

- * set goals and enact incentives for National Board certification in every district, with the aim of certifying 105,000 teachers during the next 10 years.

If teaching is organized as are other professions that have set consistent licensing requirements, standards of practice, and assessment methods, then advancement can be tied to professional growth and development. A career continuum that places teaching at the top and supports growing expertise should 1) recognize accomplishment, 2) anticipate that teachers will continue to teach while taking on other roles that allow them to share their knowledge, and 3) promote continued skill development related to clear standards.

Some districts, such as Cincinnati and Rochester, New York, have already begun to develop career pathways that tie evaluations to salary increments at key stages as teachers move from their initial license to resident teacher (under the supervision of a mentor) to the designation of professional teacher. The major decision to grant tenure is made after rigorous evaluation of performance (including both administrator and peer review) in the first several



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years of teaching. Advanced certification from the National Board for Professional Teaching Standards may qualify teachers for another salary step and/or for the position of lead teacher - a role that is awarded to those who have demonstrated high levels of competence and want to serve as mentors or consulting teachers.

One other feature of a new compensation system is key. The central importance of teaching to the mission of schools should be acknowledged by having the highest-paid professional in a school system be an experienced, National Board-certified teacher. As in other professions, roles should become less distinct. The jobs of teacher, consultant, supervisor, principal, curriculum developer, researcher, mentor, and professor should be hyphenated roles, allowing many ways for individuals to use their talents and expertise without abandoning the core work of the profession.

5. Create schools that are organized for student and teacher success. "The Commission recommends that schools be restructured to become genuine learning organizations for both students and teachers: organizations that respect learning, honor teaching, and teach for understanding."

Many experts have observed that the demands of serious teaching and learning bear little relationship to the organization of the typical American school. Nothing more clearly reveals this problem than how we allocate the principal resources of school - time, money, and people. Far too many people sit in offices on the sidelines of the school's core work, managing routines rather than improving learning. Our schools are bureaucratic inheritances from the 19th century, not the kinds of learning organizations required for the 21st century.

Across the United States, the ratio of school staff to students is 1 to 9 (with "staff" including district employees, school administrators, teachers, instructional aides, guidance counselors, librarians, and support staff). However, actual **class size** averages about 24 and reaches 35 or more in some cities. Teaching loads for high school teachers generally exceed 100 students per day. Yet many schools have proved that it is possible to restructure adults' use of time so that more teachers and administrators actually work in the classroom, face-to-face with students on a daily basis, thus reducing **class sizes** while creating more time for teacher collaboration. They do this by creating teams of teachers who share students; engaging almost all adults in the school in these teaching teams, where they can share expertise directly with one another; and reducing pullouts and nonteaching jobs.

Schools must be freed from the tyrannies of time and tradition to permit more powerful student and teacher learning. To accomplish this the commission recommends that state and local boards work to:

- * flatten hierarchies and reallocate resources to invest more in teachers and technology and less in nonteaching personnel;
- * provide venture capital in the form of challenge grants that will promote learning linked to school improvement and will reward effective team efforts; and
- * select, prepare, and retain principals who understand teaching and learning and who can lead high-performing schools.



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If students have an inalienable right to be taught by a qualified teacher, teachers have a right to be supervised by a highly qualified principal. The job began as that of a "principal teacher," and this conception is ever more relevant as the focus of the school recenters on academic achievement for students. Principals should teach at least part of the time (as do most European, Asian, and private school directors), and they should be well prepared as instructional leaders, with a solid understanding of teaching and learning.

Next Steps

Developing recommendations is easy. Implementing them is hard work. The first step is to recognize that these ideas must be pursued together - as an entire tapestry that is tightly interwoven.

The second step is to build on the substantial work of education reform undertaken in the last decade. All across the country, successful programs for recruiting, educating, and mentoring new teachers have sprung up. Professional networks and teacher academies have been launched, many teacher preparation programs have been redesigned, higher standards for licensing teachers and accrediting education schools have been developed, and, of course, the National Board for Professional Teaching Standards is now fully established and beginning to define and reward accomplished teaching.

While much of what the commission proposes can and should be accomplished by reallocating resources that are currently used unproductively, there will be new costs. The estimated additional annual costs of the commission's key recommendations are as follows: scholarships for teaching recruits, \$ 500 million; teacher education reforms, \$ 875 million; mentoring supports and new licensing assessments, \$ 750 million; and state funds for professional development, \$ 2.75 billion. The total is just under \$ 5 billion annually - less than 1% of the amount spent on the federal savings-and-loan bailout. This is not too much, we believe, to bail out our schools and to secure our future.

A Call to Action

Setting the commission's agenda in motion and carrying it to completion will demand the best of us all. The commission calls on governors and legislators to create state professional boards to govern teacher licensing standards and to issue annual report cards on the status of teaching. It asks state legislators and governors to set aside at least 1% of funds for standards-based teacher training. It urges Congress to put money behind the professional development programs it has already approved but never funded.

Moreover, the commission asks the profession to take seriously its responsibilities to children and the American future. Among other measures, the commission insists that state educators close the loopholes that permit administrators to put unqualified "teachers" in the classroom. It calls on university officials to take up the hard work of improving the preparation and skills of new and practicing teachers. It asks administrators and teachers to take on the difficult task of guaranteeing teaching competence in the classroom. And it asks local school boards and superintendents to play their vital role by streamlining hiring procedures, upgrading quality, and putting more staff and resources into the front lines of teaching.



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If all of these things are accomplished, the teaching profession of the 21st century will look much different from the one we have today. Indeed, someone entering the profession might expect to advance along a continuum that unfolds much like this:

For as long as she could remember, Elena had wanted to teach. As a peer tutor in middle school, she loved the feeling she got whenever her partner learned something new. In high school, she served as a teacher's aide for her community service project. She linked up with other students through an Internet group started by Future Educators of America.

When she arrived at college she knew she wanted to prepare to teach, so she began taking courses in developmental and cognitive psychology early in her sophomore year. She chose mathematics as a major and applied in her junior year for the university's five-year course of study leading to a master of arts in teaching. After a round of interviews and a review of her record thus far, Elena was admitted into the highly selective teacher education program.

The theories Elena studied in her courses came to life before her eyes as she conducted a case study of John, a 7-year-old whom she tutored in a nearby school. She was struck by John's amazing ability to build things, in contrast with his struggles to learn to read. She carried these puzzles back to her seminar and on into her other courses as she tried to understand learning.

Over time, she examined other cases, some of them available on a multimedia computer system that allowed her to see videotapes of children, samples of their work, and documentation from their teachers about their learning strategies, problems, and progress. From these data, Elena and her classmates developed a concrete sense of different learning approaches. She began to think about how she could use John's strengths to create productive pathways into other areas of learning.

Elena's teachers modeled the kinds of strategies she herself would be using as a teacher. Instead of lecturing from texts, they enabled students to develop and apply knowledge in the context of real teaching situations. These frequently occurred in the professional development school (PDS) where Elena was engaged in a yearlong internship, guided by a faculty of university- and school-based teacher educators.

In the PDS, Elena was placed with a team of student teachers who worked with a team of expert veteran teachers. Her team included teachers of art, language arts, and science, as well as mathematics. They discussed learning within and across these domains in many of their assignments and constructed interdisciplinary curricula together.

Most of the school- and university-based teacher educators who made up the PDS faculty had been certified as accomplished practitioners by the National Board for Professional Teaching Standards, having completed a portfolio of evidence about their teaching along with a set of rigorous performance assessments. The faculty members created courses, internship experiences, and seminars that allowed them to integrate theory and practice, pose fundamental dilemmas of teaching, and address specific aspects of learning to teach.



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Elena's classroom work included observing and documenting the learning and behavior of specific children, evaluating lessons that illustrated important concepts and strategies, tutoring and working with small groups, sitting in on family conferences, engaging in school and team planning meetings, visiting homes and community agencies to learn about their resources, planning field trips and curriculum segments, teaching lessons and short units, and ultimately taking major responsibility for the class for a month at the end of the year. This work was supplemented by readings and discussions grounded in case studies of teaching.

A team of PDS teachers videotaped all their classes over the course of the year to serve as the basis for discussions of teaching decisions and outcomes. These teachers' lesson plans, student work, audiotaped planning journals, and reflections on lessons were also available in a multimedia database. This allowed student teachers to look at practice from many angles, examine how classroom situations arose from things that had happened in the past, see how various strategies turned out, and understand a teacher's thinking about students, subjects, and curriculum goals as he or she made decisions. Because the PDS was also wired for video and computer communication with the school of education, master teachers could hold conversations with student teachers by teleconference or e-mail when on-site visits were impossible.

When Elena finished her rich, exhausting internship year, she was ready to try her hand at what she knew would be a demanding first year of teaching. She submitted her portfolio for review by the state professional standards board and sat for the examination of subject-matter and teaching knowledge that was required for an initial teaching license. She was both exhilarated and anxious when she received a job offer, but she felt she was ready to try her hand at teaching.

Elena spent that summer eagerly developing curriculum ideas for her new class. She had the benefit of advice from the district mentor teacher already assigned to work with her in her first year of teaching, and she had access to an on-line database of teaching materials developed by teachers across the country and organized around the curriculum standards of the National Council of Teachers of Mathematics, of which she had become a member.

Elena's mentor teacher worked with her and several other new middle school mathematics and science teachers throughout the year, meeting with them individually and in groups to examine their teaching and provide support. The mentors and their first-year colleagues also met in groups once a month at the PDS to discuss specific problems of practice.

Elena met weekly with the other math and science teachers in the school to discuss curriculum plans and share demonstration lessons. This extended lunch meeting occurred while her students were in a Project Adventure/physical education course that taught them teamwork and cooperation skills. She also met with the four other members of her teaching team for three hours each week while their students were at community-service placements. The team used this time to discuss cross-disciplinary teaching plans and the progress of the 80 students they shared.

In addition to these built-in opportunities for daily learning, Elena and her



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colleagues benefited from the study groups they had developed at their school and the professional development offerings at the local university and the Teachers Academy.

At the Teachers Academy, school- and university-based faculty members taught extended courses in areas ranging from advances in learning theory to all kinds of teaching methods, from elementary science to advanced calculus. These courses usually featured case studies and teaching demonstrations as well as follow-up work in teachers' own classrooms. The academy provided the technologies needed for multimedia conferencing, which allowed teachers to "meet" with one another across their schools and to see one another's classroom work. They could also connect to courses and study groups at the university, including a popular master's degree program that helped teachers prepare for National Board certification.

With the strength of a preparation that had helped her put theory and practice together and with the support of so many colleagues, Elena felt confident that she could succeed at her life's goal: becoming - and, as she now understood, always becoming - a teacher.

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Class Size

Siobhan Underwood and Linda S. Lumsden

The debate surrounding class size and student achievement has inspired researchers to undertake numerous studies to determine whether smaller classes are truly more conducive to student learning. Despite extensive research, however, the results have been inconclusive.

Those on each side of the class-size debate argue that the data substantiate their respective positions. Thus, while many teachers claim the data support the notion that students learn more in smaller classes, many board members and administrators say the research supports their contention that class size would have to be cut drastically to have a significant effect on student achievement. They argue that class-size reduction of this magnitude would be prohibitively expensive.

The issue of class size is important to all those who have a stake in education. In addition to the potential effect of class size on student learning, teachers are also concerned with how class size affects their workloads and stress levels. Administrators are attentive to the impact of class-size decisions on budgets, facilities, and programs, while state and federal policy-makers are particularly interested in how class size affects overall education costs.

Although there is agreement in the educational community that classroom environment influences student learning, how that environment should be changed—if at all—is where teachers and adminis-

trators often come to an impasse. The items featured here touch on several aspects of the multifaceted class-size debate.

Allen Odden reviews the literature on class size and its relationship to student achievement and contends that class-size reduction should be used “sparingly and strategically.”

C. M. Achilles and colleagues examine classroom conditions in a project that compared an elementary school with full Chapter 1 eligibility and another school in the same system that were similar in most respects except for class size.

B. A. Nye, C. M. Achilles, J. B. Zaharias, and B. D. Fulton describe the processes and results of three related longitudinal class-size initiatives—Tennessee’s Student Teacher Achievement Ratio (STAR) Project, the Lasting Benefits Study (LBS), and Project Challenge.

Douglas E. Mitchell and *Sara Ann Beach* review the history of class-size research, then pose and answer four questions relevant to policy issues or classroom practices.

Tommy M. Tomlinson notes the political nature

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of the class-size debate and challenges many assumptions about class-size effects, based on the results of Tennessee's STAR Project.

Helen Bain, Nan Lintz, and Elizabeth Word studied the teaching practices, as well as the professional and personal characteristics, of 50 first-grade teachers who participated in the STAR Project and were deemed effective based on substantial gains made by their students in reading and math.

Odden, Allan. "Class Size and Student Achievement: Research-Based Policy Alternatives." *Educational Evaluation and Policy Analysis* 12:2 (Summer 1990): 213-227. EJ 415 880.

In this review of research, Odden first discusses findings of Glass and Smith's 1978 meta-analysis of research on class size and student achievement (see *Research Roundup* 1:2, April 1985), calling it "the major research report around which class size policy issues have been debated during the 1980s." He also summarizes criticisms and re-analyses of Glass and Smith's findings.

"Research on class size and student achievement supports dramatic—and only dramatic—class size reductions," concludes Odden. He claims that "only when classes are reduced to 1-3 students—that is, a tutoring situation—do important achievement gains result." Smaller classes do, however, positively affect teachers' classroom attitude and behavior, giving them opportunities to engage in instructional strategies that research suggests can raise student performance.

Two powerful class-reduction strategies that can affect student achievement at the elementary level, particularly when used in tandem, are to provide individual or small-group tutoring for students who are achieving below grade level, and to institute class-size reductions (to 15), but only in language arts/reading instruction.

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If these two strategies are combined with cooperative learning, peer and volunteer tutoring, computer-assisted instruction, and a rich curriculum that emphasizes thinking skills, even greater academic benefits can be obtained, says Odden, who notes that comprehensive staff development is required to ensure that such strategies are adopted.

Achilles, C. M.; Kiser-Kling, Karen; Aust, Ann; and Owen, Jean. **Success Starts Small.** Final Report. Greensboro, North Carolina: University of North Carolina, 1994. 41 pages.

The study reported in this paper examined life in two different class-size situations to find out how teachers teach in the early grades. In one school, which had full Chapter 1 eligibility, the teacher/student ratio was about 1:15 in grades K-1-2. In the comparison school, the ratio was approximately 1:23. Both schools were in the same district, and classes were matched on nearly all variables except class size. Data were obtained through interviews, structured observations, and informal classroom visitations. Processes in the project schools were compared with other research, other small-class settings, and "regular" settings.

The smaller classes were characterized by high levels of task communication from teachers to individual students, smooth transitions, and minimal disciplinary problems. Student test performance in the smaller classes was significantly better than in the larger ones, although differences in classroom space and materials also had an impact on instructional effectiveness.

Nye, B. A.; Achilles, C. M.; Zaharias, J. B.; and Fulton, B. D. **"Class-Size Research: From Experiment to Field Study to Policy Application."** Paper presented at the annual meeting of the American Educational Research Association, Atlanta, April 1993. 29 pages. ED 356 558.

This paper describes the methodology and results of three related class-size studies. The first, the Student-Teacher Achievement Ratio (STAR) Project, was a four-year longitudinal study in Tennessee that examined the effects of class size on student achievement in kindergarten through grade 3. More than 6,000 students from 75 schools in 42 systems participated.

Three class sizes were used in the study: small

(13-17 students), regular (22-26 students), and regular classes with a full-time teacher aides. Students in the smaller classes improved more than those in larger classes, even with the presence of teacher aides, and improvements made in kindergarten were maintained through grade 3.

The Lasting Benefits Study (LBS) followed a sample of STAR students through grades 4 and 5 to determine if their early small-class involvement had any lasting effects. The study used student test scores and behavioral indicators as variables for analysis. The results were consistent: Students in the LBS study who had attended the small STAR Project classes outperformed students in the other two STAR groups in virtually every year in which achievement was compared. In addition, students who had been taught in the small grade 3 STAR classes were more advanced and had higher levels of participation than students who had attended the regular-size classes.

Tennessee's Project Challenge, the third study described in this paper, provided incentives for class-size reductions in 17 counties. Preliminary results indicate student gains in reading and math among project participants.

Mitchell, Douglas, and Beach, Sara Ann. *How Changing Class Size Affects Classrooms and Students. Policy Briefs*, Number 12. San Francisco: Far West Laboratory for Educational Research and Development. 1990. 5 pages. ED 358 077.

In the first section of this policy brief, Mitchell and Beach review the history and evolution of class-size research from a period prior to the 1920s to the present. They then pose, and attempt to answer, four questions relevant to policy issues or classroom practices.

How much, and how reliably, do class-size reductions lead to increased student achievement?

Mitchell and Beach respond that achievement gains are reliable and can be regarded as "substantial" if reductions are continued through a student's 13-year career in the public school system.

How does changing the student/teacher ratio influence student learning?

The authors conclude that class-size reductions "improve attitudes and encourage the use of effective teaching techniques." In small classes, teachers tend to "interact more frequently with individual students and make substantive changes in classroom layout, student evaluation, and classroom management." Teachers of small classes in Tennessee, for example, report "less noise and misbehavior, more use of learning centers, more enrichment activities, more coop-

eration among students, and a better ability to evaluate student work effectively."

What are the organizational and fiscal implications of class-size reduction?

Mitchell and Beach note that while there is more than one way to estimate the cost of class-size reduction, even the most favorable cost estimates are "sobering." However, if schools are "willing to make schedules more complex and to use staff members more flexibly," they can reduce instructional group size without bringing in additional staff, and thereby lower costs.

Can class-size reduction and desired achievement gains be accomplished without increasing the number of teachers and classrooms?

The authors argue that class size can be reduced by redeploying staff members, redistributing students, and incorporating small-class instructional strategies into existing classrooms. As an example of staff redeployment, they cite an elementary school that "divides the school day to devote a three-hour block of time exclusively to instruction in the core academic subjects. During this period, all certificated staff take a class of about 15 students and instruction is protected from all interruptions. Assemblies, office announcements, and children changing classes occur only during the remainder of the day, when class size is allowed to rise to about 30 students."

Tomlinson, Tommy M. "Class Size and Public Policy: The Plot Thickens." *Contemporary Education* 62:1 (Fall 1990): 17-23. EJ 431 934.

Tomlinson asserts that to make a real improvement in student achievement, class size has to be reduced so drastically that it is not financially feasible. He says virtually all research indicates that reducing class size by even a few students is very expensive and is unlikely to produce significant improvements in student learning. Tomlinson also contends that significant class-size reduction can have "unintended consequences," including exacerbation of the teacher shortage and decline in teacher quality as schools are forced to choose less competent teachers to fill a greater number of teaching positions.

Tomlinson critiques Indiana's PRIME TIME class-reduction project and Tennessee's Project STAR. Although he claims the costly PRIME TIME "has failed to meet an acceptable cost-benefit standard" in terms of student achievement, it persists, in part because teachers derive benefits from smaller class size.

Tomlinson contends that the "principal finding of Project STAR is not the size of the achievement yield, or enlightenment about the nature of effective in-

struction. Rather, it is the mundane substantiation of a class-size effect achieved under nearly ideal conditions." Noting that the participating teachers were all volunteers who strongly believed that smaller classes were better than larger classes, Tomlinson charges that they "appear to have done little to take advantage of the situation, hardly departing from their customary routine regardless of class size."

Both the capital and instructional costs of reduced class size, paired with insufficient evidence of the effects of class size on achievement, cause Tomlinson to conclude that pursuing such a course may not be justified.

Bain, Helen; Lintz, Nan; and Word, Elizabeth. **A Study of First Grade Effective Teaching Practices from the Project STAR Class-Size Research.** July 1989. 37 pages. ED 321 887.

To better understand the qualities of effective teachers, Bain, Lintz, and Word interviewed and observed the professional and personal characteristics of 50 teachers who participated in Tennessee's Project STAR. The teachers were chosen because

their classes' average gains in reading and mathematics ranked in the top 15 percent. Eight teachers had regular class sizes of 22-25 students, seven had intermediate class sizes of 18-21 students, and 23 had small classes of 13-17 students. Twelve had full-time aides.

The teachers demonstrated the following professional characteristics:

- High expectations for student learning;
- Clear, focused instruction;
- Close monitoring of student learning and progress;
- Use of alternative methods when students did not learn;
- Use of incentives and rewards when students did not learn;
- Efficiency in their classroom routines;
- High standards for classroom behavior; and
- Excellent personal interactions with students.

A common denominator among the teachers was their genuine love for children, which permeated their teaching. Praise for student success and enthusiastic demonstration of activities, combined with a sense of humor, were evident in all cases, regardless of class size. The researchers determined that these qualities, in addition to the reductions in class size, were in large part responsible for the teachers' success. □

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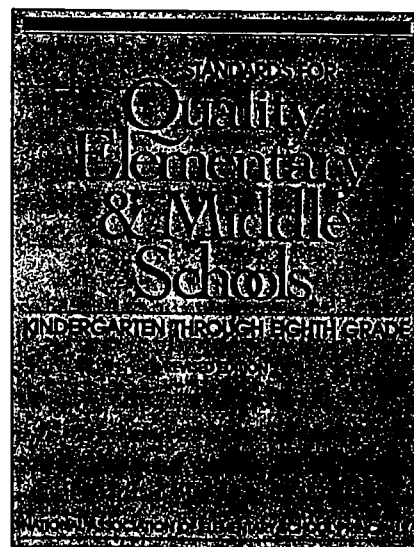
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FULL-TEXT ARTICLES

Small Classes, Big Possibilities

BY CHARLES M. ACHILLES

A researcher laments the lack of action on the class-size issue despite documented results

The Los Angeles Times recently asked in a front-page headline: "\$1 Billion Question: Do Smaller Classes Work?"

While the newspaper's prime interest is in California where Gov. Wilson is trying to reduce the student load in kindergarten through 3rd-grade classrooms, the answer ought to be strikingly clear everywhere, based on nearly two decades of validating research, on common sense and on similarities throughout education. As the National Education Association implored in an Education Week advertisement: "We need a little class."

Indeed, if public education is to be a class act and U.S. schools are to become world class, improvement should start at the class level.

A Domino Effect

Size matters, and small class size matters a great deal for the schooling of young children. The debate over class size still rages--less so on the merits, more so on economics, lack of clarity and terminology--in spite of the compelling evidence.

Perhaps the idea of small classes for students in the early grades is so commonsensical today that educators don't consider it a challenge. Yet education's leaders must look beyond the surface variables to understand the systemic, domino-effect possibilities of class-size changes.

What other education reform attracts the unbridled support of parents, teachers, researchers, policymakers and even students? One also would expect that business and government leaders, especially those who believe in the concept of span of control, would rush to support a teacher-to-pupil ratio of about one teacher to 15 students.

The span-of-control notion that undergirds many bureaucratic structures is that one manager can efficiently and effectively work with about seven or eight subordinates--presumably,

subordinates who can read, write, feed themselves and find their way to the bathroom. In his

ongoing plan to reinvent government, Vice President Al Gore urges federal agencies to reduce the span of control from about 1:7 to about 1:15. Surely, our youngest students deserve the same 1:15 consideration. A class-size reduction to 1:15 is one way in K-3 education to address the politically popular conundrum, "less is more."

Documented Results

Conclusive research has shown the benefits of class sizes of 1:15, especially in the primary grades. Since the early 1980s, a large-scale project in Indiana, a major experiment in Tennessee, numerous smaller studies and evaluations of projects that use low adult-to-student ratios have found that youngsters in small classes (1:15 or so) as compared to youngsters in larger classes:

- * obtain higher test scores;
- * participate more in school;
- * demonstrate improved behavior; and
- * retain many benefits of early class-size reductions in their later years of schooling.

These results should not surprise anyone familiar with young children and the schooling process. Perhaps only the skeptics of educational research may be surprised that, at least in the class-size arena, studies support common sense and some consensually validated best practices. What charter school or exclusive private school attracts students by promising large classes? Does home schooling use big classes?

Consider, in addition, the other education efforts that also benefit from the small-class effect: tutorials, apprenticeships, special education, remediation projects such as Reading Recovery and Success for All, mentoring, peer tutoring, Advanced Placement.

Wouldn't an adjustment to smaller classes, especially in the early primary grades, make an exciting platform for the systemic reforms for which most school district reformers clamor?

Major Implications

Early information on the impact of class size, such as the 1978 meta-analysis linking class size to student achievement by Gene Glass and Mary Lee Smith, as well as Educational Research Service reports in 1978 and 1980, showed that small classes bolster student learning. Glen Robinson's synthesis of class-size research in the May 1990 issue of Educational Leadership, work by Robert Slavin and others at Johns Hopkins University, Tennessee's Project STAR (Student Teacher Achievement Ratio) experiment, and Harold Wenglinsky's 1997 Education Testing Service study titled "When Money Matters" have shown that all students can benefit from early instruction in small classes or small groupings and that benefits are differentially distributed. Minority students and youngsters of low socioeconomic status get substantially larger benefits from beginning their schooling in small classes than do other youngsters.

Wenglinsky said it well: "4th graders in smaller-than-average classes are about half a year ahead

of 4th graders in larger-than-average classes" and "The largest effects seem to be for poor students in high-cost areas." The benefits of small classes in early grades have major policy implications for massive redirection of education resources.

Some critics say that the probable costs of small classes do not justify the demonstrated benefits. A reasonable question for them is, "How do you know?" Class-size benefits seldom have been evaluated carefully because small classes are not widely used in public education except for special-needs youngsters. (Aren't all youngsters special?) The full benefits of 1:15 in early primary grades can't be known until classes of such size are used and evaluated and until the students reach later grades. This is not a quick-fix remedy.

Other critics argue that something else might work better, but they don't provide worthy research-based evidence for their alternative, whether it be charter schooling or vouchers. And if they do offer backup support, their alternatives are usually small-class derivatives, such as tutorials or more special projects.

Teaching Benefits

Having an appropriately sized class allows teachers to employ important teaching strategies that help youngsters learn. Smaller classes also let teachers work closely with the adults at home to improve school-community involvement strategies. Teacher morale improves.

Teachers in small classes can devote more time to individualized attention, engage in more time-on-task instruction and identify precisely and early those student learning problems that can be remediated before a student falls too far behind. A small class can be a family. Student behavior and achievement benefit from improved classroom environments.

In separate critiques of Project STAR, the largest experiment in class-size research, both Frederick Mosteller, an emeritus professor at Harvard, and Donald Orlich of Washington State University identified major positive results that emerge from smaller student-teacher ratios. In the April 1991 issue of *Kappan*, Orlich wrote, "In my opinion [STAR] is the most significant educational research done in the U.S. during the past 25 years."

In his review of the Tennessee class-size project in the Summer/Fall 1995 issue of the *Future of Children*, Mosteller suggested that policymakers and school leaders ought to pay heed to the empirical evidence when they decide how to organize students within schools and how to support student learning. He described STAR as "a controlled experiment, which is one of the most important educational investigations ever carried out and illustrates the kind and magnitude of research needed in ... education to strengthen schools."

A Slow Response

Developing appropriately sized classes for early student learning should be the first giant step in moving American education to world-class status. The firm foundation provided by a bold move of this nature can serve as the starting point for systemic improvements to K-12 schools. The paradox here is that the critical politicians and business people who often ask educators to bring about dramatic changes in student outcomes typically proffer ideas that have no research base and never have been tested or evaluated in education. These critics ask for systemic change while serving up a platter containing only special projects and "Band-Aids." Systemic change demands an interconnectedness between one change and others.

A reasonably sized class in the early primary grades is a base for systemic change. The benefits of 1:15 or so in the early grades will trigger changes throughout the entire system and influence legislation and policy in ways that will spawn supportive education practices.

Youngsters who start school in classes of 15 or fewer students need less remediation later. Special education problems are identified early and, once corrected, the youngsters don't spend endless years in the special education spiral. Youngsters in smaller classes seldom are retained in grade. Discipline improves. These benefits will cut costs.

Research shows that the largest impact on student outcomes is achieved when the student enters schooling in the small-class setting. Thus, a preferred strategy for implementing the 1:15 goal is to have the class-size reduction effort begin at kindergarten or even pre-kindergarten and then ripple through the grades, one grade at a time, through about grade 3.

In addition, the STAR research has called into question one popular and expensive remedy: the use of teacher aides. In large classes teachers may send to their aides those students who are disruptive--the very students whom the teacher should be serving on a one-to-one basis. When sent to an aide, these students lose the benefits of the teacher's professional knowledge and skill. They may be given meaningless and repetitive tasks good for little more than keeping them quiet, rather than having their learning difficulties diagnosed and addressed by the classroom professional best trained to deal with them. What systemic changes might these and other adjustments, stemming from a 1:15 ratio, generate throughout schools?

Major Challenges

No one suggests that moving to significantly smaller classes can be accomplished easily. Starting youngsters off in smaller classes offers a severe test of a school district leader's creativity and management skill.

The most significant challenges include: finding classroom space and qualified teachers, redefining the use of teacher assistants, adjusting class sizes with minimum added expenditures and helping teachers with larger classes understand that student learning needs to be the base for school reform. Fortunately, innovative leaders who implement the solid research findings serve as examples to lead the way.

Today, the question is not "What should we do?" Rather, one should ask, "How can we use these

substantial research results?" Here, then, is the real professional challenge: Stop debating what to do, or redirect the debate until better options than appropriately sized classes are available and tested. Instead get serious with the task of using the demonstrated class size results to improve education for all children.

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Please also see:

[Exploring Class-Size Research Issues and Further Reading on Class Size.](#)

[Return to the School Administrator](#)

Exploring Class-Size Research Issues

BY CHARLES M. ACHILLES

The understanding and use of research seldom are straightforward or without interpretation and compromise.

Certainly this is the case when applying research to the continuing struggle to find the most appropriate size for classes in elementary education--within the political, fiscal and ideological frameworks that constrain school leaders.

Two Decades of Research

Class-size research has improved greatly over the years. The results of class-size studies now are supported by increasing knowledge about early learning, brain functioning, neuroscience and child development.

Early class-size research often was not well designed. It suffered from too short duration, too few students or too few classes. The 1978 meta-analysis by Gene Glass and Mary Lee Smith to detect a class-size effect opened new interest in class-size issues. In the early 1980s, Indiana's Prime Time uncovered some class-size effects, but it was designed as a project, not as an experiment. Prime Time was implemented unevenly, classroom aides were included in the small-class condition and the class-size reduction began in grade 1 rather than in kindergarten. While the results were positive, they were not compelling.

By 1985 Tennessee's legislature asked for a longitudinal education experiment, known as Project STAR (Student Teacher Achievement Ratio) to learn about the effects of small classes (1:15 versus 1:25 teacher-student ratios) on student outcomes in grades K-3. Strict experimental controls and protocols were applied. The findings clearly favored the 1:15 ratios.

Because of its size and complexity, the STAR database has been the basis of studies of class size and retention, school size, random versus non-random pupil assignment, participation in school, student discipline, the use of full-time aides in classes of 25 students and other topics.

STAR spawned two major studies: the Lasting Benefits Study, which tracks students to assess the extent and duration of early benefits of a 1:15 ratio, and Project Challenge, a policy application of 1:15 in Tennessee's poorest counties. Both studies provide positive support for

early 1:15 schooling.

A 1987-88 teacher-observation study in classes of 15 and 25 students and a 1991-97 longitudinal 1:15 initiative in Burke County, N.C., provide positive results similar to those found in STAR.

Evaluating Research

Educational leaders need to be careful when reviewing a study on class size and should be aware of what to look for in research findings. Not all studies deserve the same attention.

Although statistical significance explains the probability that some findings would be a chance event, the "effect size" describes how much of a standard deviation the means of the groups are apart. The effect size can estimate the "educational significance" of some statistically significant research finding. An effect size of .35 or so is worth considering, especially if it is cumulative. Classes with a 1:15 teacher-student ratio and projects based on small classes typically get an effect size .3 to .7 or so when compared to larger groupings.

With newer evaluation and research designs, more sensitive outcome measures and better analytic models, current class-size studies are producing small-class effect sizes similar to those found in STAR. These results should warrant attention from practitioners and policymakers. Their consistency across sites is one type of replication: Similar studies get similar results.

To determine if class-size research outcomes should influence decisions, the educational leader should consider the strength of the design, the duration of the study, how pupils and teachers were assigned to classes, what measurement instruments were used and the results of multiple measurements. Variables other than class size should not cloud the results. The study limitations should be clearly stated.

Ask these questions: How do the study results match up with controlled class-size studies, such as STAR? Do the findings make sense? Do they square with common sense and with other relevant knowledge? Does the research seem impartial? Has it been conducted by persons with special interests? (Education research should benefit students, not vendors.)

Clarifying Confusion

Class-size research already is helping to answer the critics, who over the years have contended that a change in the pupil-teacher ratio has little positive influence on student outcomes. To the contrary, class-size research has shown that small classes influence student outcomes positively.

Is it possible both can be correct? Actually, it is because pupil-teacher ratios and class size are not the same.

Class size refers to the number of students in a teacher's class. The pupil-teacher ratio usually

results from dividing the enrollment by the assigned professional staff. Low-performing students tend to be in schools with larger classes and smaller pupil-teacher ratios. Serious reading and analysis of class-size research will help sort out the complex issues in the class-size debate.

Applying Research

The STAR results became available at a time when federal education policy was on another path, so they received little attention from policymakers. One federal official at the time suggested that STAR probably would not be replicated due to its cost, size and complexity. But the federal policy debate today may now be shifting. The U.S. Department of Education's 1997 report, "Building Knowledge for a Nation of Learners," states that "studies ... such as reducing class size in the primary grades, have proved to help children get a good start in school." The more closely an initiative with a 1:15 ratio follows the STAR design, the more likely that both results will be similar. Other designs of 1:15 will provide new knowledge and probably different results.

The finding of a class-size effect on student achievement and development is research. The use of these findings is politics. Once various implementations of 1:15 and evaluations of them exist, a new round of research will determine the refinements of practice that can yield even more benefits from appropriate-sized classes for early-primary youngsters.

-- Charles Achilles

Return to the School Administrator

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Does class size matter? The newest trend can transform schools - or waste billions of dollars. (reducing sizes of elementary school classes)

Toch, Thomas; Streisand, Betsy

U.S. News & World Report, v123, n14, p22(6)

Oct 13, 1997

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ABSTRACT: California has reduced the size of its elementary school classes to no more than 20 students, a very popular initiative backed by Gov Pete Wilson. The trend is likely to catch on nationwide even though the expense is enormous and the outcome yet unexamined.

TEXT:

There are so many students crammed into P.S. 14 in Queens, N.Y., that lunch is split into three shifts beginning at 10:25 a.m. To manage the traffic of 1,700 students, many of them recent immigrants from Latin America and South Asia, each grade level has its own designated exit door. An art studio and a science lab have been sacrificed for use as regular classrooms. Until two years ago, many students spent exercise periods in their classrooms because the school's gym was being used for regular studies. Dancing the macarena at their desks counted as physical education.

Most important, the size of P.S. 14's classes affects the way Rehana Longi teaches and the way her students learn. Angling her body to squeeze between desks, she struggles, unsuccessfully, to give each of her 34 fifth-grade students a few minutes of individual attention. During a 35-minute arithmetic lesson, she gets to check the answers of about 12 students. Creativity is limited. "There's a lot of emphasis on textbooks," she says. "It's got to be that way."

Not for many children in California. In Los Angeles's Hancock Park Elementary School, teacher Sandy Sutton spots one of the 20 students in her second-grade class struggling with a reading task. "Sssttiiiicckk," Sutton says, helping the girl sound out the word. Sutton says the shy kids in her class don't fade into the background as they once did. She can pinpoint slow readers within the first days of school and give them special attention. She can cover more ground during each class period.

In the past, Sutton routinely taught classes of 31 or 32 students and faced difficulties similar to Longi's. But last year the size of Sutton's class was cut under a wildly popular initiative pushed by Republican Gov. Pete Wilson to reduce the size of classes statewide in kindergarten through

third grade. Sutton, for one, is thrilled at the change. "If I ever had to go back to that, I'd quit teaching," she declares.

The class-size cuts have already changed the look and feel of California's schools, where nearly an eighth of the nation's students are enrolled. In slightly over a year, the state has created at least 17,000 new classes and over half of the state's 1.9 million eligible students have been placed in classes of no more than 20 students. (In recent years California has had classes averaging 30 students.) Parents overwhelmingly say that smaller classes have increased their children's reading and writing skills. Perhaps most amazingly, parents in Beverly Hills and other affluent enclaves have begun shifting allegiances to public schools, in part because they are now guaranteed small classes similar to those offered by private schools.

As a result of the class-size initiative, Wilson's approval ratings are now the highest he has enjoyed. Democrats in the state legislature are singing the reform's praises. Even the state's teachers' unions have been silenced by surveys showing that over 90 percent of their members believe the class cuts have improved instruction.

"Silver bullet." As President Clinton and Congress fight in Washington over the wisdom of using national exams to spur school improvement, California has found that this bold solution has forged a rare alliance of educators, Democrats, Republicans, unions, and taxpayers. And California's class-size trend seems to be spilling into other states. The Wisconsin Senate last month approved a plan to spend up to \$50 million to reduce average class sizes in poor areas to 18 students or fewer. The move is "a silver bullet, a sure-fire, proven way to improve the quality of education," says Democratic state Sen. Chuck Chvala. New York, North Carolina, and several other states also have passed class-shrinking measures recently, and another half dozen are debating such steps. The issue is expected to be the center of discussion during a special session of the Florida legislature this fall.

But there is one catch: Reducing class size is expensive. California is spending \$2.5 billion over two years to cut class size, and the annual cost of sustaining the reform will start at about \$1.5 billion (a 7.5 percent increase in state-level education spending) and rise steadily as new teachers climb salary ladders. To reduce the average class size by 10 students nationally would cost on the order of \$85 billion for teachers alone. But while the California approach is politically popular, across-the-board cuts in class size are not the most cost-effective way to spend education money. As the class-size crusade spreads to other states, the question of how the reform is implemented--who benefits and who doesn't--deserves scrutiny. Smaller classes could be one of the most important school reforms of recent years--or a colossal waste of money.

The popularity of the class-size initiative stems in part from the perception among parents that increases in education spending over the

years haven't found their way into classrooms. On the one hand, public-education spending has increased by at least 61 percent beyond inflation during the past 30 years, and the bulk of the money has been spent on hiring new teachers. Yet the size of regular classrooms has dropped only slightly, largely because the majority of the new teachers work with small groups of disabled students and others with special needs. Wilson rallied support for his expensive initiative by saying he would give subsidies only to those schools that actually succeeded in reducing class size. To voters, smaller classes are "the single strongest rationale for spending more money on schools," says pollster Celinda Lake of Lake Sosin Snell Perry & Associates. Indeed, nearly 60 percent of parents surveyed in a new U.S. News poll say they'd be more likely to vote for a political candidate who wants to raise taxes if the money went to pay for smaller class sizes in kindergarten through third grade. The poll was designed for U.S. News by Democrat Lake with Republican pollster Ed Goeas.

In some regions, large classes are a serious problem. While the average elementary class size in the nation's public schools has declined from 30 to 25 over the past four decades, poor urban school systems continue to struggle with overflowing classrooms. So do schools in Florida and other booming Sun Belt states. The problem isn't likely to ease: Enrollment is expected to increase by 2 million students nationally during the next decade.

In deciding to invest so heavily in smaller classes, Wilson's advisers relied on the findings of an experiment in Tennessee called Project STAR, the nation's only large, long-term study of class size. In 1985, Tennessee put 6,500 kindergartners in 330 classes of different sizes. A third of the classes had between 13 and 17 students; a third had between 22 and 26 students, the typical size of classrooms in the state; and a third had enrollments of 22 to 26 students plus a full-time teacher's aide. The students in small classes stayed in them for four years and then returned to larger ones in the fourth grade. The test scores and behavior of students in the small classes were better than those of kids in the larger classes. For instance, 69 percent of first graders in smaller classes passed the state's reading test, compared with 58 percent of students in larger groups. Teachers said students who had been in the smaller classes also paid closer attention, asked more questions, and had fewer discipline problems. They even participated more in school clubs and generally became more engaged in school life.

But the benefits that the Tennessee study found in smaller classes are easily squandered if implementation isn't handled properly. California, in reducing class size, might be lowering the quality of teaching. School districts have had to find teachers for the 18,000 new slots; as a result, nearly two thirds of the new hires have little or no teaching experience. In Los Angeles, new teachers have included Nordstrom clerks, a former clown, and several chiropractors. The state needs to hire 15,000 more