

Class Size Reduction Initiative
Smaller Classes + Quality Teachers = Increased Student Achievement

1. Purpose

The purpose of this initiative is to reduce class size and provide quality teachers in the early grades, to help all students learn to read independently and well by the end of the 3rd grade.

2. Design Issues to Address

Funding levels

- Presume \$5 - \$10 billion over 5-7 years
- Phased-in implementation
- Cost-sharing requirement
- Do not assume this is one-time initiative
- Distribution of funds: by formula to state and within state to district, based on number (and cost?) of new teachers needed to meet targets? Is there a better approach?

Class Size Targets

- NCES producing updated information on current state-by-state average class size in each of grades K-3; this will form basis for estimating cost of reductions to different ceilings (15, 18, 20) at two or more grade levels
- Need to figure out how to deal with differences in current class size within and between states -- what do we do with states/districts that are at or close to target: (1) let them use funds for class size reductions in other grade levels?

Teacher Quality

- Professional Development for existing teachers, focused on effective teaching in small groups, on language acquisition and on effective reading instruction.
- Preparation and Hiring of new teachers, to ensure that increased demand does not lead to lowering of licensure/hiring standards, and to ensure that new teachers are adequately prepared.
- Teacher Recruitment: How to attract quality teachers to inner cities, and prevent exodus of most qualified/experienced teachers to new openings in suburbs; how to phase in class size reductions so that pipeline issues are addressed at same time
- Helping or removing low performing teachers: Requirement to have serious teacher evaluation system in place that identifies weak teachers, gives them help and if necessary removes them.
- For above issues: what do we require from states/districts? What do we (help) pay for in this initiative? How do we link this initiative with teacher training and related funds in America Reads, Eisenhower, Title 1 and in Title V proposal?

Facilities Issues

- How should we link this with school construction initiative, if at all, beyond rhetorically?

Local Planning and Flexibility

- Need to give districts adequate time for planning and phase-in
- What do we require in the way of state and local plans--how directive and specific should we be?
- How can we best encourage and help local districts and schools carefully and intelligently think through the range of issues they need to address--what kind of t.a. will be needed?
- Possible options for districts that cannot find the space or teachers for reducing class size to target levels:
 - o reductions in instructional group size for reading alone
 - o intensive, proven reading approaches such as Reading Recovery and Success for All
 - o After-school tutoring
 - o small summer classes
 - o one-time use of \$ for facilities (e.g. to buy portables)

Equity Issues

- Reductions in class size will have biggest positive impact on low income, minority, inner-city kids, BUT:
- Urban schools will have the hardest time attracting and retaining qualified teachers, and are most likely to hire people who don't meet licensure requirements
- High poverty school districts most likely to be affected by funding arrangements that require matching funds or dislocations
- Inner city school districts have greatest facilities problems
- Impact on bilingual education needs to be watched--especially in light of shortage of qualified teachers.

Accountability/Evaluation

- Requirement for local districts to evaluate impact on reading achievement, make midcourse corrections as needed, and, ultimately lose funds if no demonstrable achievement gains over time?
- National evaluation?



UNITED STATES DEPARTMENT OF EDUCATION

THE SECRETARY

FAX TRANSMITTAL

TO BRUCE REED
MIKE COHEN

PHONE _____ FAX _____

FROM SECRETARY RILEY

PHONE _____ FAX 401-2098

PAGE(S) TO FOLLOW _____ DATE _____

MESSAGE: _____

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UNITED STATES DEPARTMENT OF EDUCATION

THE SECRETARY

November 25, 1997

Mr. Bruce N. Reed
Assistant to the President
for Domestic Policy
The White House
Washington, D. C. 20500

Dear Bruce:

Enclosed is a thoughtful response from three key people in my Department regarding the classroom size issue.

I wanted all of you in the White House to have this information before we break for the holidays.

I hope that you and your family have a pleasant and meaningful Thanksgiving weekend.

Yours sincerely,

A handwritten signature in cursive script, appearing to read "Dick", is written over the typed name.

Richard W. Riley

cc: Mike Cohen



UNITED STATES DEPARTMENT OF EDUCATION

OFFICE OF THE SECRETARY
November 23, 1997

MEMORANDUM

TO: Secretary Riley

FROM: Terry Dozier, Special Advisor on Teaching
Paul Schwarz, Principal in Residence
Mary Beth Blegen, Teacher in Residence

RE: Class Size Reduction Proposal

We want to express what must be key components of any proposal around class size reduction. While the idea is very appealing both to teachers and the public, it is a very difficult and complex issue. Our ideas are focused in the following areas.

- **Teacher Quality/Training**

Reducing class size without attending to the qualifications and training of teachers will negate benefits gained through that reduction. Even a small class size with an ill-prepared teacher will result in a poor education for the students impacted. With our work on Title V and with the National Commission on Teaching and America's Future, we are trying to focus the nation on the importance of enforcing high standards for teachers. Both you and Governor Hunt spoke passionately last week at the National Press Club about our need to maintain those standards. This proposal, if done right, could strengthen support of high standards for teachers and students but, if unaddressed, would be a retreat.

- **Knowledge of Research Findings**

All of the research findings around reducing class size tell us that it is not very effective unless the student-teacher ratio is reduced to 15-1. In addition, reducing class size alone without other improvements, including professional development for teachers and meeting the ensuing demands of more classroom space, does not necessarily lead to increased student achievement. If teachers continue to teach in the same way that they did with a class size of 30-1, few benefits will result by simply lowering the student-teacher ratio.

- **Cost**

One reason school districts have not voluntarily proceeded with class size reductions has been the prohibitive costs involved compared with the potential benefits. Tony Alvarado, Superintendent of District 2 in New York City, recently stated at the Department that reducing class size by one student across grade six would cost \$1 million. This figure does not include the necessary training needed

to help teachers learn to teach more effectively in smaller class settings. So the training of teachers to teach well in the smaller classes must be part of the proposal.

- **Space**

Many schools do not have the space to reduce class size. In some districts in California, the class size reduction initiative has floundered because of the lack of classroom space. Those districts have been unable to take advantage of the funds. We suspect that those districts that are already overcrowded and could benefit the most from such an initiative might be the least able to find space and teachers to take advantage of such a program. So it would be important to couple a major investment in class size with a major investment in school construction.

- **Unfunded Federal Mandate**

When the federal government moves aggressively into the operational budgets of school districts and then pulls out, the result is an unfunded mandate which can have very negative consequences. So the source of funding must be permanent.

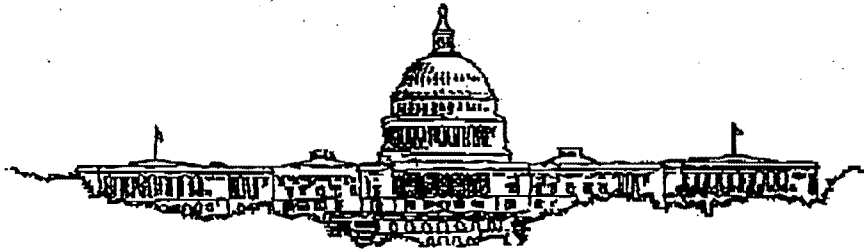
- **Targeting**

It is unclear whether this proposal will be targeted to our most vulnerable students -- students in poor neighborhoods, learning-disabled students, limited-English-proficient students, etc. Currently some classes have an enrollment of 30 and others have only 18. We are unsure if this program will have the same effect in both situations. So targeting the reductions to the highest-need schools is extremely important.

- **Proper Role of the Federal Government**

The current proposal identifies actions to be taken in specific grade levels. In doing so, this proposal moves decision making away from local districts and schools, preventing them from targeting those areas that they know need the most attention. For example, some states have already taken measures to reduce class size in primary grades. In addition, recently a superintendent told Department officials that he prefers to use additional money for professional development for his entire staff rather than to reduce class size. So this clearly shows the need to have a package of initiatives, e.g., school construction, teacher development, class size reduction, so that there would be flexibility to address one area more than another based on need and previous state or local action.

We are aware that this proposal has wide appeal and we support legislation that brings additional support to schools. As the three people at the Department most responsible for bringing the school perspective to policy making, we believe our views can be helpful in strengthening this initiative.



FAX

U.S. SENATOR PATTY MURRAY

To:

John Schuer 456-7028

DATE:

4/15/99

FROM:

Alexis L. Schuler

STAR findings

PAGES SENT (INCLUDING COVER SHEET): 4

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DRAFT**Project STAR****THE TENNESSEE STUDENT/TEACHER ACHIEVEMENT RATIO STUDY****Background & 1999 Update****WHAT IS STAR?:**

- A large-scale, four-year, longitudinal, experimental study of reduced class size, that is considered "one of the most important educational investigations ever carried out and illustrates the kind and magnitude of research needed in the field of education to strengthen schools." [Frederick Mosteller, Professor Emeritus of Mathematical Statistics at Harvard University (Summer/Fall 1995). *The Future of Children: Critical Issues for Children and Youths*, 5(2), p. 113-127.]
- Sound research which "leaves no doubt that small classes have an advantage over larger classes in reading and math in the early primary grades." [Finn, J. D., & Achilles C. M. (1990, Fall). Answers and questions about class size: A statewide experiment. *American Educational Research Journal*, 27(3), 557-577.]
- Robert Slavin, John Hopkins University, an AERA reactor, praised Project STAR's design and integrity and called it a "watershed event" in research.

HOW WERE STAR FUNDS OBTAINED AND USED?:

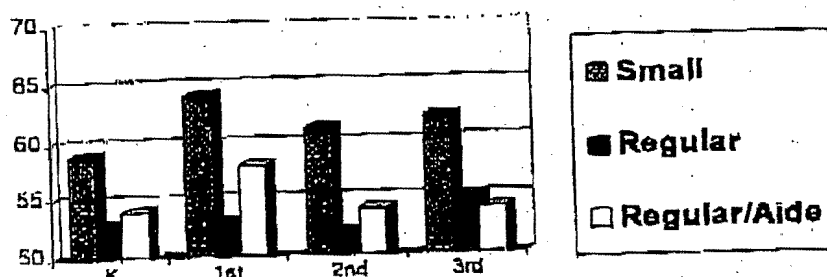
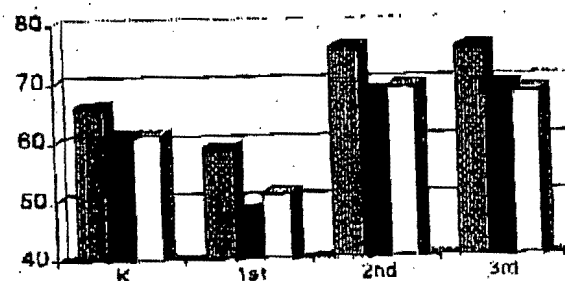
- Helen Pate-Bain presented Tennessee Legislators with the positive results from her class-size study that had been conducted within one Metropolitan Davidson County school. Pate-Bain obtained a \$12 million dollar legislative appropriation to complete STAR. Out of \$12 million, \$9,679,879 were used for teacher and teacher aide salaries.

HOW WAS THE STAR STUDY DESIGNED?:

- All Tennessee schools were invited to participate.
- Each school had to have at least one of each of the three class types: small (13 to 17 students), regular (22-26 students), and regular with a full-time teacher aide (22-26 students) for the within school design.
- The study included 79 schools in 42 systems which resulted in over 6,000 students per grade level.
- Schools from inner-city, rural, urban, and suburban locations were included in the experiment.
- All students and teachers were randomly assigned to their class type.

WHAT WERE THE MAIN FINDINGS FROM STAR?:

- At each grade level (K-3), and across all school locations, the small classes made the highest scores on the norm-referenced Stanford Achievement Test (SAT) and the criterion-referenced Basic Skills First Test (BSF). These results were both statistically and educationally significant.

STAR Reading Percentile Ranks, Kindergarten - Grade 3, 1985-1989**STAR Math Percentile Ranks, Kindergarten - Grade 3, 1985-1989****DRAFT**

WHAT WERE OTHER IMPORTANT FINDINGS FROM STAR?

- The Greatest Gains on the SAT were made in Inner-City Small classes.
- The Highest Scores on the SAT and BSI were made in Rural Small classes.
- The Classes that scored in the top 10% on the SAT Total Reading are identified as follows:
 - 18 of the top 33 classes were small in Kindergarten.
 - 22 of the top 34 classes were small in First Grade.
 - 23 of the top 34 classes were small in Second Grade.
 - 25 of the top 32 classes were small in Third Grade.
- Inner-City (Predominantly Minority) students in small classes always outscored inner-city students in regular and regular/aide classes. This suggests that small classes are very beneficial to minority students. Non-Free Lunch Minorities in suburban small classes performed as well as Non-Free Lunch Whites.
- The effective teacher research (Bain, Word, Lintz, 1999) revealed certain teaching practices, characteristics, and communication skills that when combined with small classes produce more effective learning:
 - Creative Writing, Hands on Experiences, Learning Centers, Use of Manipulatives
 - Good Listener, Immediate Feedback, Monitoring, Preplanned Instruction, Well Organized
 - Assertive Discipline, High Expectations, Peer Tutoring, Reteaching
 - Effective Communication with Parents, Love of Children
 - Enthusiasm, Flexibility, Patience, Sense of Humor
 - Ability to establish effective communication with the home.
 - Ability to involve the family in the education of their children.
 - Ability to teach parents how to teach their children.
 - Ability to make home visits.

WHAT POLICY IMPLICATIONS RESULTED FROM STAR?

- Tennessee's school finance plan, the Basic Education Plan, includes incentives for school systems to reduce class sizes to 20 or fewer students in the early primary grades (K-3).
- Approximately 30 states across the U.S. and several foreign countries have used the STAR findings to initiate steps toward smaller classes.

WHAT IS THE CURRENT STATUS OF PROJECT STAR?

The Tennessee Legislature and private foundations have funded HBROS, Inc. to conduct follow-up studies through the end of the STAR students' high school graduation and beyond. The full-scale study of the effect of small primary classes (K-3) on long-term social outcomes includes research related to higher education, juvenile detention and adult prison rates, and welfare and employment security. This research is still in progress. Preliminary findings show:

- ###% small-class, ##% regular-class, & ###% regular/aide-class students completed high school honors English courses.
- ###% small-class, ##% regular-class, & ###% regular/aide-class students completed a foreign language course during high school.
- ###% small-class, ##% regular-class, & ###% regular/aide-class students completed advanced mathematics course during high school.
- ## was the overall high school Grade Point Average (GPA) for small-class students; the regular-class students' GPA was ##, and the regular-aide class students had a GPA of ##.
- ###% small class, ##% regular-class, and ###% regular/aide-class students graduated from high school.
- ##% of small-class students received an honors diploma; ###% of regular-class students and ###% of regular/aide-class students also received an honors diploma.
- ##% of small-class students received a regular/vocational high school diploma; ##% of regular-class students and ###% of regular/aide-class students also received a regular/vocational diploma.

DRAFT

- ###% of small-class students received a special education diploma; ###% of regular-class students and ##% of regular/aide-class students also received special education diplomas.
- ###% of small-class students received an attendance diploma; ###% of regular-class students and ##% of regular/aide-class students also received an attendance diploma.
- ###% of small-class students completed either the ACT Assessment or Scholastic Aptitude Test (SAT) college entrance exams; ###% of regular-class students and ##% of regular/aide-class students also completed either the ACT or SAT.
- IF KRUEGER WANTS OTHER ACT/SAT INFO, IT CAN GO HERE.

HEROS, Inc. announced release of the first public version of the Project STAR small class-size research database. The database is accessible via the World Wide Web at www.telalink.net/~heros. This web site also features up-to-the-minute information on the official Project STAR longitudinal research results.

**For more information on Project STAR, please contact: Jayne Boyd-Zaharias, Director,
Health & Education Research Operative Services (HEROS), Inc.,
PO Box 1271, Lebanon, TN 37088-1271
Phone: (615) 449-7904, FAX: (615) 449-7904, e-mail: heros@telalink.net**

Helen Pate-Bain, Chairperson: (334) 640-7012

HEROS, Inc. is a 501 (c) (3) nonprofit organization.

DRAFT

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Draft: Executive Summary, 4/9/98**The Effect of Attending a Small Class in the Early Grades on College Attendance Plans****Alan B. Krueger and Diane M. Whitmore¹
Princeton University****Background**

Project STAR was an experiment in which 11,600 students and their teachers in grades K-3 were randomly assigned to a small class (13-17 students), regular-size class (22-25 students), or regular-size class with a teacher aide within 80 Tennessee public schools. The experiment began with kindergarten students in the 1985-86 school year. After four years, all students were returned to regular-size classes. Project STAR students who moved along on pace would have graduated from high school in the Spring of 1998. To determine the impact of having attended a smaller class in elementary school on students' long-term educational outcomes, we asked ACT, Inc. and the College Board/Educational Testing Service to link information on high school seniors in the class of 1998 who took the ACT or SAT exam to records that we provided on the 11,600 students from Project STAR, regardless of where the Project STAR students resided in 1998. The resulting database contains information on whether Project STAR students in the class of 1998 wrote either the ACT or SAT exam, their test score, and information from the background questionnaire students fill out when they take the ACT or SAT exam. This is the first database that permits a long-term examination of the behavior and post-high school aspirations of Project STAR participants. This Executive Summary describes our initial findings for a sample of more than 9,000 Project STAR students who were high school seniors in 1998.

Specific Findings

* The main results are illustrated in Figure 1. This figure reports the percent of students who took either the ACT or the SAT exam by the type of class they were assigned to attend their initial year in Project STAR. The figures are reported for all students combined, for white and black students separately, and for students who received free or reduced-price lunch in at least one year in grades K-3. For the entire sample, Figure 1 indicates that 43.7% of students who were assigned to a small class took either the ACT or SAT exam, whereas 40.0% of those assigned to a regular-size class took one of the exams, and 39.9% of those assigned to a regular-size class with an aide took one of the exams. The 3.6 percentage point higher test-taking rate for the students assigned to small classes relative to those assigned to regular-size classes was statistically significant at the .05 level; that is, this difference is unlikely to have occurred by chance.

¹Alan Krueger is the Bendheim Professor of Economics and Public Affairs at Princeton University and a Research Associate of the National Bureau of Economic Research. Diane Whitmore is a graduate student in the Economics Department at Princeton University.

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* Figure 1 also indicates that attending a small class was particularly effective in raising the proportion of black students who wrote one of the college entrance exams. Only 31.7% of black students in regular-size classes wrote the ACT or SAT exam, whereas 40.2% of black students in small classes wrote the college entrance exam. To gain some perspective on the magnitude of this effect, note that black-white gap in taking a college entrance exam was 13.3 percentage points for students in regular-size classes, and 6.1 percentage points for students in small classes. Thus, attending a small class reduced the black-white gap in the college-entrance-test-taking rate by 54 percent.

* Earlier research on Project STAR has found that minority students and students on free lunch exhibited the greatest gains in test scores as a consequence of attending a small class. The findings in Figure 1 complement a result that has been found consistently throughout Project STAR: minority students benefited most from attending a small class, and small classes were able to considerably narrow, although not eliminate, the gap in educational performance between black and white students.

* Table 1 provides further evidence on the effect of class size on the percent of students who took the college entrance exam. The first three columns of Table 1 contain the data used to construct Figure 1. To ensure that our results are not due to extraneous factors, we estimated a series of logistic regressions in which we controlled for the students' race, sex, free or reduced-price lunch status, and the specific elementary school he or she attended. Our findings were unchanged when we controlled for these variables, so we emphasize the simpler re-tabulations. Nonetheless, the fourth column of the table reports a statistical test of the null hypothesis that initial class-type assignment is unrelated to the likelihood the student writes either the ACT or SAT exam. With the exception of white students, these tests indicate that it is very unlikely that the observed differences in test-taking rates across the three types of classes would have occurred by chance.

* Tennessee is a state in which a majority of college-bound students take the ACT exam. Tables 2 and 3 provide separate tabulations of the test-taking rates for the ACT and for the SAT: some 40% of STAR students wrote the ACT exam while fewer than 6% wrote the SAT exam. The disaggregated results in Tables 2 and 3 indicate that, compared to students assigned to regular-size classes, students assigned to small classes were more likely to take the ACT exam, and were more likely to take the SAT exam.

* Class size may not have to shrink to 15 students for smaller classes to raise the likelihood that students take the ACT or SAT exams. We find that students who were initially assigned to a class with 21-25 students their first year in Project STAR were more likely to take the ACT or SAT exam than students who were assigned to classes with 26-30 students. And students who were assigned classes with 16-20 students were more likely to take the ACT or SAT exam than students who were assigned to classes with 31-35 students.

* We do not know how many students who took the ACT or SAT exam have actually enrolled in college, or how many years of higher education they will ultimately complete. But based on an analysis of the High School Class of 1973 Database, we found that high school seniors who took the ACT or SAT exam completed an

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average of 1.63 more years of schooling than students who did not take one of the college entrance exams, after controlling for the race and gender of the students.

* Lastly, we examined the test scores students achieved on the ACT and SAT exams. For students who took the SAT but not the ACT exam, we converted their SAT score to an ACT equivalent score using a concordance developed by researchers at the College Board. For any student who wrote the ACT exam we used their ACT score, even if he or she also took the SAT exam. The average ACT test scores were virtually identical for students who were assigned to small and regular-size classes. For the full sample of 3,812 test takers, the average student in small and regular-size classes both earned a 15.3 composite ACT score. Moreover, assignment to a small class did not appear to alter the average test score for any of the subgroups that we examined (i.e., black, white and free or reduced-price lunch students). Past studies have found that average test scores tend to decline when more students take the college entrance exam, because the marginal test takers are weaker students than the average student. In the STAR experiment, however, students assigned to small classes were more likely to take the ACT or SAT exam, but the average score of those in small classes did not decline. One possibility is that there are two offsetting effects: (1) scores increased for those who would have otherwise written the exam; (2) the additional students who took the college entrance exam because they attended a small class were weaker students, on average.

Conclusion

Attendance in a small class in grades k-3 appears to have raised the likelihood that students take either the ACT or SAT college-entrance exam. Since most colleges in the U.S. require students to take either the ACT or SAT exam to be admitted, these findings suggest that lowering class size in the elementary school grades raises the prospect that students will attend college. The beneficial effect of smaller classes on college aspirations appears to be particularly strong for minority students, and students on free or reduced-price lunch. Indeed, attendance in small classes appears to have cut the black-white gap in the probability of taking a college-entrance exam by more than half. Moreover, attending a small class appears to raise the probability that students write the ACT or SAT exam without lowering the overall average score of students who take the exam.

Appendix: Description of the Sample

With the assistance of HEND's, Inc., we provided the ACT and SAT organizations computer files which contained several variables from the STAR database, including demographic data, class assignment, and primary school test scores. The ACT and SAT data were merged to these records on Project STAR students on the basis of the students' names, dates of birth and Social Security numbers. If a STAR record was missing information on one of these three identifiers, the remaining identifiers were used to complete the merger. The data were merged together by searching over ACT and SAT records for the entire U.S., so any student who had moved away from Tennessee should still be included in the sample. About 9 percent of the STAR students who were identified by the search algorithm took the ACT or SAT exam outside of Tennessee. Once the data were merged together, the students' names, dates of birth, and Social Security numbers were concealed to preserve confidentiality.

Several checks indicated that the data were linked properly. For example, the correlation between the students' ACT score percentile rank and their 8th grade Tennessee Comprehensive Assessment Program (TCAP) Test percentile rank was .80, which is even higher than the correlation between the students 3rd grade Stanford Achievement Test Score percentile and their 7th grade TCAP percentile (.74). Additionally, the sex of the students based on their STAR records matched their sex in the ACT records in 98.7% of cases. These checks suggest that STAR students were correctly linked to their ACT and SAT records.

The ACT and SAT databases are organized by graduating high school classes. Only members of the High School Class of 1998 were included in the ACT and SAT records that formed the basis of the search. As a consequence, STAR students who repeated a grade or for some other reason were not high school seniors in 1998 could not be matched to their ACT and SAT records, even if they had taken one of the exams. Because of this feature of the data, we restrict our sample to the subset of 9,397 students who were on grade-level based on information that we have on students who wrote the TCAP exam through the eighth grade. As a further check, however, we re-calculated Figure 1 for the entire sample of 11,600 students in our database (which includes students who fell behind and were not high school seniors in 1998), and find qualitatively similar results as in Figure 1. Thus, our results are robust to the inclusion of students who have fallen behind grade level.

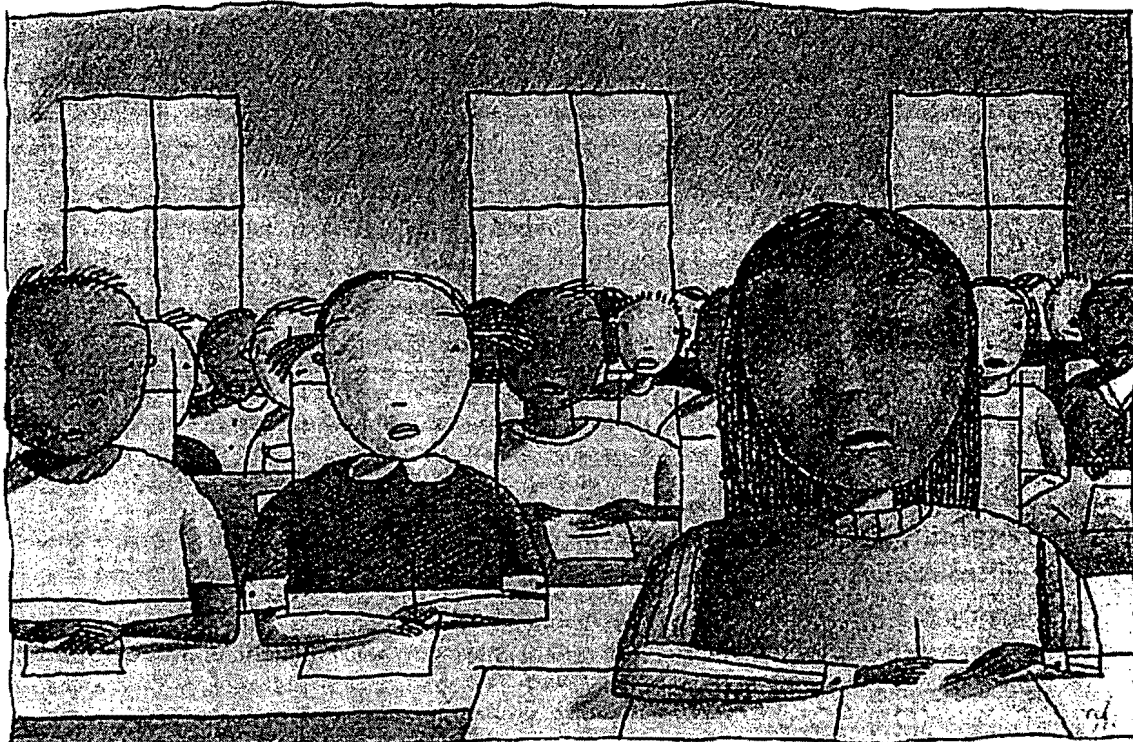
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ON EDUCATIONAL RESOURCES

GET CONNECTED

Subscribe to WestEd's Class Size Reduction email list to receive updates and share comments, questions or experiences.

Send your email address to:
csr@WestEd.org.



Whitney Sherman

Small Classes Raise High Hopes, Many Questions

Small classes for primary school students have become more the rule than the exception in California following passage of class-size reduction legislation just six months ago. Although California's effort has captured headlines because of the state's size, complexity and speed of implementation, many states have enacted similar measures or are considering them. In the Western Region, Nevada and Utah began reducing class size six years ago. Arizona currently has no plans for mandating smaller classes, but as its population continues to explode, class-size reduction may become an issue. ■ Recognizing the fast-moving nature of this reform and its relevance to all states, WestEd this fall published a backgrounder on California's class-size reduction and created an electronic system for ongoing two-way communication on class-size issues. These resources aim to keep educators current, particularly on potential strategies for optimizing this new opportunity. The new *Focus* on California's class-size reduction, titled "Smaller Classes Aim to Launch Early Literacy," is the first in a planned WestEd series of papers on hot topics in education.

WestEd

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Schools must be deliberate about using opportunities created by smaller classes.

WestEd's email and fax subscriber list (see below) offers electronic updates on class-size issues and encourages subscribers to reply with their own experiences, questions or ideas. Both the *Focus* and email updates can be accessed on WestEd's Class Size Reduction page at its policy Web site, which also provides links to other class-size reduction resources.

Lessons Learned. Though it seems like common sense that smaller classes make for better learning, research on such a link has been inconclusive. However, researchers do tend to agree on a couple of points: no one knows what the optimal small class size is; and smaller classes don't *automatically* lead to higher achievement. "Smaller Classes" takes a closer look at how and under what circumstances classes with fewer pupils do make a difference and explores the best practices for achieving those goals.

Seizing Opportunities. Research suggests that schools must be deliberate about using opportunities created by smaller classes if students are to realize achievement gains. Most important, class-size reduction and teaching must be considered together. The new California law requires staff development plans that support small primary-class teaching. Good staff development, according to the best knowledge from research and practice, is ongoing, school-based and geared to create a learning community among teachers. In California especially, but also in many other states, it needs to focus on instructional strategies for diversity, imparting knowledge about language acquisition and ways to communicate across languages and cultures. Teachers also must be prepared to recognize and respond to learning problems. If possible, new, less experienced teachers should be paired with veterans for practical help and constructive evaluation.

Logistical Roadblocks. The twin challenges for schools striving to take advantage of smaller classes are adequate personnel and facilities. In California, where 20,000 teachers are needed to fully implement the K-3 reform and about 8,000 new classrooms are needed just for first grade, the logistics are especially daunting. But

districts in Nevada, Utah and other states with rapid enrollment growth are similarly challenged. Hiring and facilities needs have been addressed in many creative ways, including districtwide reconfigurations of existing space and year-round scheduling; collaborative efforts with higher education; innovative teaching arrangements; and community and cross-district partnerships. But the solutions often mean trade-offs: two teachers to a classroom, hiring less experienced teachers, busing a student across town or teaching a class in what once was the computer lab. Districts must make complex and difficult decisions.

Big-Picture Planning. Creative thinking is needed sooner rather than later, given the high stakes. "Smaller Classes" reports a number of innovations and recommends that solutions evolve from comprehensive, big-picture planning. The publication suggests districts address a multitude of complex issues, including teacher preparation and inservice; the supply of mentor teachers; teacher retention; the impact of primary-grade changes on upper-grade programs; and the impact of year-round scheduling on families. "Smaller Classes" recommends strategies for addressing these issues, beginning with clarifying community expectations, rethinking how resources are used and setting up new kinds of collaborations to accomplish goals.

ELECTRONIC UPDATES

For periodic updates on class-size reduction issues:

• subscribe to our new email list by sending your email address to csr@WestEd.org. (In your email, we also encourage you to include comments/experiences related to class-size reduction.)

• receive the same information via fax by calling 415-241-2776 with your fax number.

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This site last updated October 20, 1997

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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Class conflict: an education reform goes awry.(California elementary school
class size-reductions)

Gearey, Robyn

The New Republic, v216, n16, p12(2)

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ABSTRACT: Gov. Pete Wilson's crash program to lower 1st and 2nd grade classes to 20 students has backfired. Many schools were forced to convert cafeterias and other space to classrooms, and cut programs from higher grades, to comply. Few principals favor extending the program to other grades.

TEXT:

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."

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04835702 SUPPLIER NUMBER: 19818386 (THIS IS THE FULL TEXT)
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

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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. "Ssstttiiicckk," 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

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 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 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.

Class size

States 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

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