



Clarifying
Complex
Education
Issues

This summary was prepared by EdSource on behalf of the CSR Research Consortium. It is an excerpt from the 2002 publication, **What We Have Learned About Class Size Reduction in California**, prepared for the California Department of Education as the capstone report of a four-year study of class size reduction in California. The full report is available at: www.classize.org



AMERICAN INSTITUTES FOR RESEARCH

RAND



PACE



WestEd

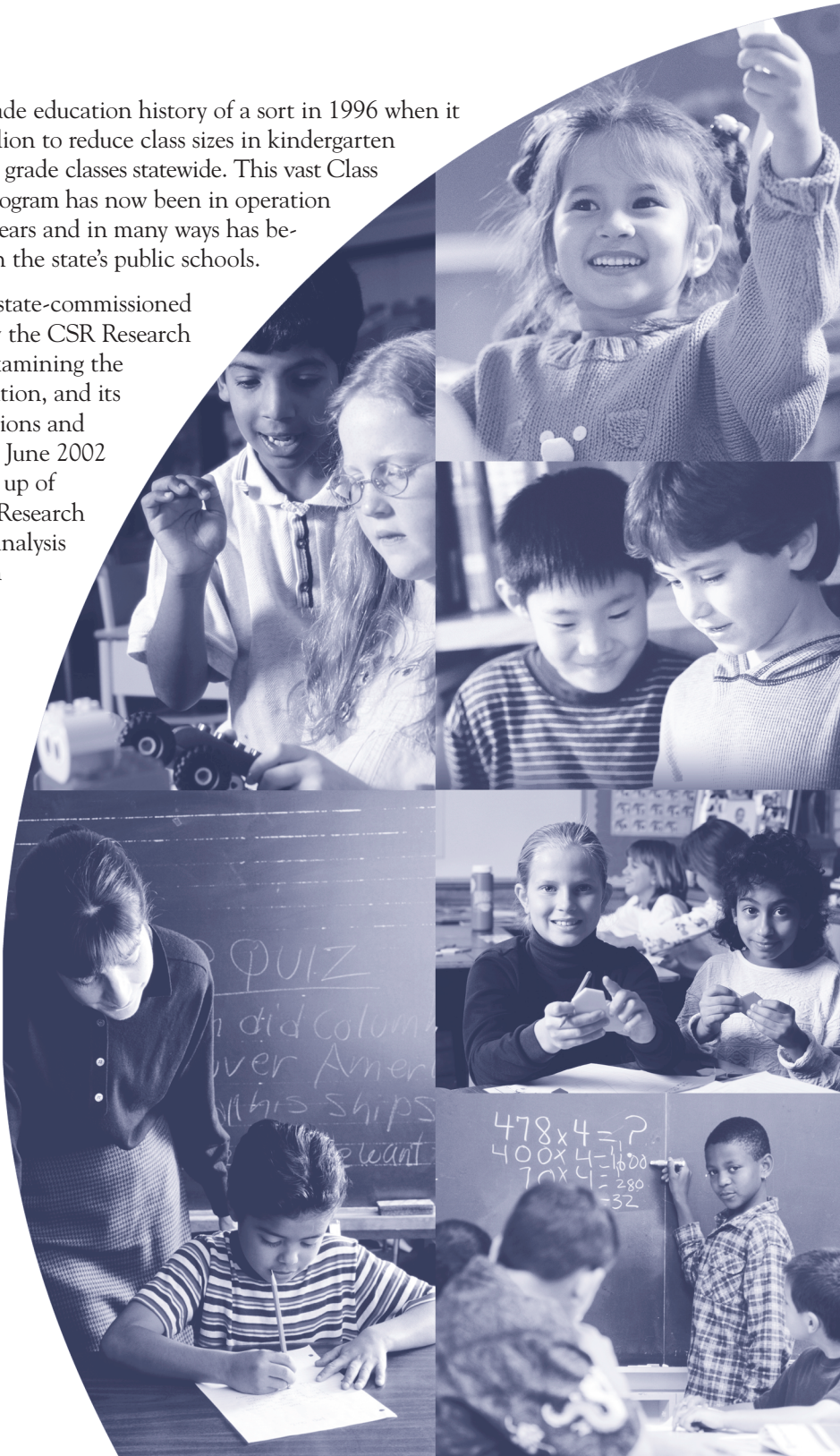
© Copyright 2002
by EdSource, Inc.

Executive Summary:

What We Have Learned About K-3 Class Size Reduction in California

California made education history of a sort in 1996 when it spent \$1 billion to reduce class sizes in kindergarten through third grade classes statewide. This vast Class Size Reduction (CSR) program has now been in operation through six full school years and in many ways has become institutionalized in the state's public schools.

During that time, a state-commissioned evaluation conducted by the CSR Research Consortium has been examining the program, its implementation, and its impact on school operations and student achievement. In June 2002 the Consortium—made up of American Institutes for Research (AIR), RAND, Policy Analysis for California Education (PACE), EdSource, and WestEd—issued its capstone report on this extended evaluation, entitled *What We Have Learned About Class Size Reduction in California*. This is the executive summary of that Consortium report. It briefly recaps the history of K-3 class size reduction in California, highlights the major findings from the Consortium's work, and summarizes its key policy recommendations. The full report as well as previous research and technical documents are available at www.classize.org.



Trish Williams
EdSource Executive Director

2002–03 EdSource Board of Directors

Kelvin K. Lee, President
Superintendent, Dry Creek Joint
Elementary School District

Peter Schrag, Vice President
Contributing Editor, Sacramento Bee

Lawrence O. Picus, Fiscal Officer
Professor, Rossier School of Educa-
tion, University of Southern California

Robert G. Haskell, Secretary
Senior Vice President, Public Affairs,
Pacific Life Insurance Company

Ray Bacchetti
Scholar in Residence, Carnegie
Foundation for the Advancement
of Teaching

Pam Brady
Vice President for Education,
California State PTA

Davis Campbell
President, CSBA
Governance Institute

Susan J. Cochran
President, American Association
of University Women—California

Judy Davis
Chair, League of Women Voters
of California Education Fund

Jan Domene
President, California State PTA

Joni E. Finney
Vice President, National Center for
Public Policy and Higher Education

Gerald C. Hayward
Director, Policy Analysis for
California Education

Ann Nkiruka Ifekwunigwe
National Board Certified Teacher,
Carthey Center Elementary School

Barbara Inatsugu
President, League of Women
Voters of California

Maggie Carrillo Mejia
Superintendent,
Montebello Unified School District

John B. Mockler
President,
John Mockler & Associates

Ted Olsson
Manager, Corporate Community
Relations, Western United States,
IBM Corporation

Amado M. Padilla
Professor of Education,
Stanford University

Krys Wulff
Past President, American Association
of University Women—California

An Overview of K–3 CSR in California

The mid-1990s found California worried about the education its students were receiving. Standardized tests provided evidence that the state's students were losing ground compared to their counterparts across the country. The results of the 1994 National Assessment of Educational Progress (NAEP) released in 1995 only reinforced the concern—California's fourth graders had tied for last place in reading among the 39 states that participated in NAEP.

A task force assembled by the California Department of Education called for various reforms, among which smaller classes was strongly favored not only by the teachers' unions, but also by parents and teachers. California elementary schools had the largest class size in the country—averaging 29 students. Evidence from the Tennessee STAR experiment (see To Learn More box on page 8) had shown rather clearly that elementary students in the primary grades did better academically when in smaller versus larger classes in K–3, and the difference was greatest for low-income and minority students.

All that was missing to put class size reduction into place was the political will and the money to do so. The dot-com boom of the 1990s solved the latter problem by providing a windfall of tax revenues, most of which were required by law to be spent on elementary and secondary education. Republican Governor Pete Wilson and the Democratically controlled Legislature seized the moment and passed Senate Bill 1777 (O'Connell) in July 1996. The law provided districts with \$650 per student for each K–3 classroom with 20 or fewer students, provided that they first reduced all first-grade classes in a school, followed by all second-grade classes, and finally by either kindergarten or third-grade classes. The cost to the state in the first year was roughly \$1 billion dollars, and in the current year roughly \$1.6 billion.

The California Department of Education and a group of California foundations awarded contracts to the American Institutes for Research (AIR), which along with RAND headed a consortium to evaluate the effects of

class size reduction on achievement, on the quality of the state's teaching corps, on special needs students, and on other practices. The Consortium—which also included Policy Analysis for California Education (PACE), EdSource, and WestEd—has produced three evaluation reports thus far. This is the fourth and final report. In it, we summarize previous findings and discuss new research done in the final year of the contract; we also include a set of policy recommendations and conclude with policy lessons learned.

What did we learn?

The major findings from this four-year evaluation can be summarized as follows:

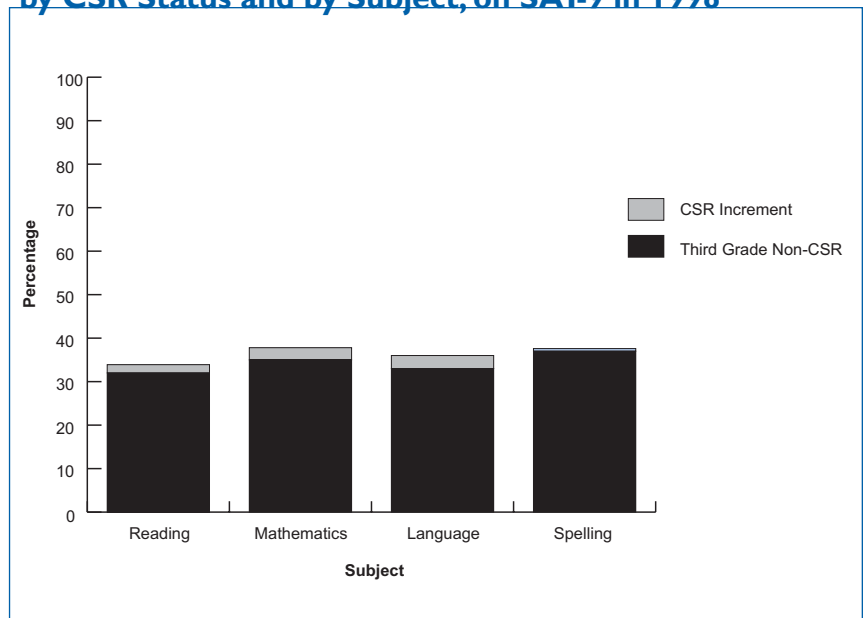
1. *Implementation of CSR occurred rapidly, although it lagged in schools serving minority and low-income students.* Districts reacted quickly to the opportunity presented by the CSR program when it was enacted in July 1996. CSR implementation was virtually complete for first and second grades by the second year of the program, and for kindergarten and third-grade students by the fourth year of the program. Implementation was slower, however, for schools with higher percentages of minority students and of low-income students, partially because schools in urban districts had more difficulty acquiring the needed space to expand the number of classrooms.

2. *Our analyses of the relationship of CSR to student achievement were inconclusive.* Student achievement has been increasing since the first administration of the Stanford Achievement Test (SAT-9) in 1998, but we could find only limited evidence linking these gains to CSR. We found a positive association in 1998 between third-grade class size and SAT-9 scores after controlling for differences in student and school characteristics. However, the size of this CSR effect was small. (See figure on page 3.) In the following year (1998–99), these positive differences persisted when students who had been in reduced size third-grade classes moved to the fourth grade and regular size classes. The spring 1999 SAT-9 results showed that fourth-

grade students who had been in reduced size third-grade classes scored higher than those who had not been in such classes. By 2001, CSR implementation was nearly complete, and as a result we could not examine differences in SAT-9 scores between students who were and were not in reduced size classes. Instead, we tracked achievement gains between cohorts of students with slightly different patterns of exposure to CSR from kindergarten through third grade. Although both overall exposure to CSR and statewide average test scores increased across cohorts, the magnitude of the changes in test scores did not track with the incremental changes in CSR. Thus, attribution of gains in scores to CSR is not warranted. More refined school-level analyses also failed to find meaningful differences in second- or third-grade scores of students with an additional year of exposure to CSR in first grade compared to students who participated only in grades 2 and 3. We could not determine whether our inability to link CSR to achievement was due to weakness of the effect of incremental differences in CSR or to design limitations (or a combination of both). We were also limited in our ability to determine how much of the recent gain in achievement was attributable to CSR and how much was linked to other initiatives.

3. *CSR was associated with declines in teacher qualifications and a more inequitable distribution of credentialed teachers.* CSR implementation along with increasing enrollments required an enormous increase in the number of K–3 teachers in California. Between 1995–96 (the year before CSR implementation) and 1998–99 (the third year of the program), the total number of K–3 teachers increased 46 percent, from 62,226 to 91,112. To meet the increased demand for teachers, many districts hired teachers without full credentials. As a result, the proportion of K–3 teachers who were not fully credentialed (e.g., teachers with intern or emergency credentials) increased from 1.8 percent before the program started to 12.5 percent in the second year of the program. Most of the uncredentialed teachers were

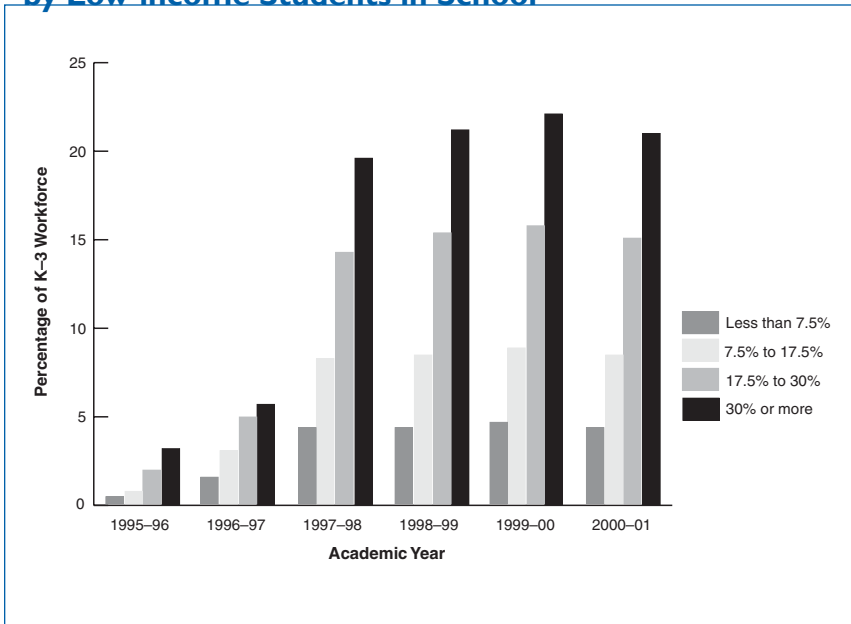
Percentage of Students Scoring Above National Median, by CSR Status and by Subject, on SAT-9 in 1998



hired by schools serving the most disadvantaged students, in part because these schools were slower to implement CSR, and certificated teachers had already been hired elsewhere. (See figure on page 4.) In 2000–01, more than one in five K–3 teachers were not fully credentialed in schools with high percentages of low-income, English learners (EL), minority, and Hispanic students (primarily large and urban).

4. *CSR had only a modest effect on teacher mobility.* One of the fears was that class size reduction would result in two types of teacher mobility—teachers from urban schools moving into suburban schools, and upper grade elementary teachers moving into K–3. While there was some initial increase, the effect was small and soon disappeared. Approximately 7 percent of first-grade teachers in 1995–96 (the year prior to CSR) had been teaching in a different school the previous year. That percentage rose to 11 percent in 1996–97 and had dropped down to 5 percent by 1999–2000. The same pattern was true in the other elementary grades. The school transfer rate was small, especially when compared to the 46 percent increase in the number of K–3 teachers during this period.

Percentage of K–3 Teachers Not Fully Credentialed, by Low-income Students in School



5. *CSR implementation did not affect special education identification or placement.* There was some concern that reducing class size might affect the number of students referred for special education assessment, the number of students identified as needing special education services, or the number of special education students placed in special day classes (instead of in general education classes). Interviews with special education directors indicated that the referrals for special education assessments increased. Our analyses of statewide enrollment data showed no evidence that CSR affected the rates for identification or placement.

6. *Students in reduced size third-grade classes received more individual attention, but similar instruction and curriculum.* Compared to teachers with larger classes, teachers of reduced size classes were more likely to say that they know what each student knows and can do, that they provide feedback on writing assignments within one day, that they give more individual attention to students, and that they are able to meet the instructional needs of all students. Teachers in reduced size classes also reported fewer behavior problems and reported that students were more likely to complete the lesson for the day and less likely to be “off

task” for more than five minutes. But teachers in both reduced and non-reduced size third-grade classes reported spending similar amounts of time and covering similar amounts of curriculum in both language arts and mathematics.

7. *Parents liked reduced size classes.* Based on survey results, parents of third-grade students in reduced size classes rated selected features of their child’s education higher than did parents of children in non-reduced size classes. The differences in rating of classroom size were particularly pronounced, with parents of children in reduced classes reporting satisfaction levels far higher than those parents of children in non-reduced classes. However, parents of children in both reduced and non-reduced size classes expressed equal satisfaction with the qualifications of their children’s teachers.

8. *Classroom space and dollars were taken from other programs to support CSR.* Most districts in our statewide sample reported incurring operating costs for CSR that exceeded state payments for it, and these funding problems persisted or even worsened in subsequent years. Districts attempted to overcome budget shortfalls created by CSR by reducing funds for facility maintenance and administrative services. About one-third of these districts also reduced resources for professional development, computer programs, or libraries. To be able to implement the program, many schools reported having to reallocate classrooms that had been designated for special education back to K–3 classrooms, thereby forcing special education classes to use alternative spaces. CSR implementation also preempted space from such programs as music and arts, athletics, and child care.

9. *In spite of budget shortfalls, most districts are not projecting CSR cutbacks for 2002–03.* In spite of the fact that the state of California is projecting a significant budget deficit for 2002–03, and that many districts are forecasting total revenues that will not meet projected expenses, none of the 38 districts we surveyed in 2002 indicated that they are contemplating elimination of CSR in the

immediate future. Some did indicate, however, that such a reduction was a possibility and would continue to be discussed as their budgets were developed. However, it would be a “last resort” given the popularity of CSR with parents and teachers.

Policy Recommendations

CSR is an enormously popular program in California among parents and teachers. It is also clear that local educators and parents value reduced class sizes for many reasons other than improved achievement as measured by statewide test scores. Therefore, maintaining small K–3 classes in California is likely to remain a priority. Nonetheless, based on our evaluation and on research done on CSR in other states, we believe that some changes to the program should be considered. In addition, the state policy environment of 2002 is markedly different from that which existed in 1996 when CSR was introduced and implementation began. The state has started moving toward a systemic standards-based system, with a strong emphasis on high expectations, accountability, and accompanying rewards and sanctions based on growth in student achievement.

1. *Improve the effectiveness of the current CSR program by integrating and aligning it with other reforms.*

The Consortium is impressed with the need to link CSR to the state’s overall strategic direction—i.e., to end its current status as a stand-alone categorical program by integrating and aligning it with the state’s standards-based policies. Such a shift, we believe, would allow CSR to better support the state’s standards-based reform strategy and might prompt better results from the CSR investment. Schools may be able to use other elements of standards-based reform—e.g., additional funding to turn around low-performing schools—in ways that allow them to take fuller advantage of the opportunities small classes have been shown to present in some states, especially for low-income and minority students. In short, integrating CSR with the state’s evolving standards-based reform policies could significantly bolster

California’s ability to meet its objective of improving student achievement.

2. *Be explicit about the assumptions underlying state reimbursement of CSR and take steps to determine the real costs and cost-effectiveness of CSR.*

There exists a fundamental difference in the way CSR is viewed by state policymakers and school district personnel. State officials describe the program as an incentive program, not a state mandate. As such, they argue, districts have the option to participate or not. They further argue that the state provides adequate resources through the combination of CSR funding and general purpose funding. Many districts, however, feel that the state indicated an intent to fully fund the program when it adjusted the funding upward in 1997. State support has not kept up with costs since then, and districts believe that the state should once again provide adequate resources for full funding. Regardless of whether or not costs are fully reimbursed, the rules regarding appropriate cost attribution should be explicit, and districts ought to have reasonably predictable revenue streams so that they can make informed choices about implementing CSR. While determining costs attributable to specific programs is not a simple matter, a careful cost review could illuminate this issue and result in a single set of rules relating to cost attribution. Even more importantly, having solid cost data would assist state and local policymakers in determining the cost-effectiveness of CSR compared with other possible reforms.

3. *Provide more local flexibility within the current CSR program by allowing a school-wide average of 20 students in grades K–3.*

Along the lines suggested by the Legislative Analyst’s Office—and consistent with the recommendations made by the CSR Consortium in previous evaluation reports—local districts should be given the flexibility to vary class size by up to two students per class as long as the class size average within a school remains at 20 students or fewer. Having the class size cap of 20 apply to a school rather than to each class within a school would give schools a

The Consortium is impressed with the need to link CSR to the state’s overall strategic direction—i.e., to end its current status as a stand-alone categorical program by integrating and aligning it with the state’s standards-based policies.

The state should consider conducting carefully controlled experiments to examine the difference moving to a class size of 15 or fewer would make, beginning with those schools that serve the largest number of low-income and minority students.

modicum of additional flexibility while only modestly affecting the way the limit is applied.

4. *Further test CSR's potential to improve the achievement of low-income/minority students by providing additional resources to create and evaluate even smaller class sizes in selected schools.*

Based on the evidence from the Tennessee STAR experiment, it appears that class size reduction can be an especially effective strategy for raising the achievement of the most at-risk students if the classes for this group are small enough and are staffed by skilled and qualified teachers. The state should consider conducting carefully controlled experiments to examine the difference moving to a class size of 15 or fewer would make, beginning with those schools that serve the largest number of low-income and minority students.

5. *Provide incentives to a small number of districts to experiment so that cost-neutral alternative class size reduction strategies can be tested and evaluated.*

If the state were to allow a relatively small number of school districts to use their CSR funding to create randomized trials of other small class size arrangements, it could compare the effectiveness of the current CSR program with alternative class size reduction designs. Participating districts would be required to randomly assign schools, or classes within schools, to the current CSR program structure or an alternative model. Researchers could then track the changes in student achievement for the alternatives. The state should also consider allowing districts to compare one or more non-CSR uses of the funds against the current CSR model, again with the requirement that this be done using randomized trials. Both of these options have the virtue of providing information about the cost-effectiveness of the alternatives (since all would have the same cost), something that could not be done as part of our evaluation. The major incentive to districts to participate

would be the ability to design their class size reduction or other programs to meet local needs. A second incentive would be additional state funds for participating districts for technical assistance in putting together the research design and for evaluating the effects of alternative uses of CSR money.

6. *Further explore why and how class size reduction works by identifying best instructional practices in small classes.*

Not enough is known yet about the conditions under which class size reduction is most effective in improving student achievement, which means we can offer little guidance about how to make it work better. More research is needed to understand which classroom practices are the most effective in small classes and whether these differ from best practices in larger classes. We know that reduced size classes had some effects on instructional practice in California, but we do not know what type of changes in classroom teaching would be needed to maximize the benefits of the reform.

7. *Before undertaking any statewide effort to expand CSR to additional grades, ensure that there are sufficient facilities and qualified teachers.*

The state has taken substantive action to remedy the facility and teacher shortage problems originally created by K–3 CSR and to address these issues more generally. There has been a thoughtful, concerted effort in recent years to establish new policies related to teacher preparation, credentialing, recruitment, and retention. As to California's school facilities crisis, significant progress has been made since CSR was signed into law. Meanwhile, however, some school districts in California continue to be severely constrained by the capacity of their facilities. It is unclear whether the state's efforts will fully eliminate the current problems, much less provide the kind of capacity that would be needed for CSR expansion.

Lessons learned that apply to future education reform efforts

Beyond the specific recommendations we make related to California's current CSR program, we think that the state's experience provides some broader lessons for policymakers. Whether California embarks on additional class size reduction initiatives or undertakes other large-scale reforms, we believe the following serve as important guides for developing effective education reform policy:


- *Be clear about where a given initiative fits within the state's overall educational policy plan.* It is important that state leaders are clear about what educational problem an initiative is trying to solve, and what system of supports might have to be in place for it to work.
- *Start small before creating a new, expensive statewide program.* If the state wants to assure that its education reform dollars are well spent, it should consider the use of controlled randomized field trials that can be evaluated prior to implementing dramatic reforms statewide. Once we know what works and in what situations, and what supports are required, then the reform can be taken statewide with greater chances of effectiveness.
- *Examine the context carefully prior to implementation.* The rapid, massive introduction of the CSR initiative had deleterious effects on the types of teachers hired, classroom space, and financial resources in a number of districts and schools. Some of those effects could have been foreseen—and perhaps mitigated—if state leaders had taken a more studied approach.
- *Carefully assess the capacity of the state's educational system to implement change.* The CSR reform strained the capacity of the state's educational system at all levels. For example, the number of less-than-fully-qualified teachers went up more than tenfold in the first two years of CSR in California. Further, the districts with the highest percentage of at-risk students were also the most likely to get the newest and least qualified teachers. When initiating a new program, careful consideration is necessary to ensure that it does not exacerbate existing inequities; instead, it should help decrease them.
- *Match financial resources with student needs.* California districts serving the highest percentages of urban, low-income, minority, and EL students were most likely to take funds that had been targeted for other educational needs in order to implement CSR. In this sense, some of the better-off districts gained, while the less well-off districts were further burdened by CSR. One way to avoid this would be to use a funding formula based on need.
- *Allow some flexibility to accommodate local differences.* Any educational intervention is unlikely to succeed to its full capacity if it does not allow for adaptations to local needs and context.
- *Allow sufficient time to implement large-scale initiatives.* The California class size reduction program was announced in July 1996 for implementation statewide in September 1996. This set off a mad scramble to convert space, obtain equipment, and hire teachers. The rapid start gave a dramatic advantage to districts that had excess capacity, had a ready pool of qualified applicants, were not struggling with other administrative issues, and could redirect resources to this effort quickly. In the future, any large initiative should have ample time for districts and schools to plan between passing it into law and implementing it.

If the state wants to assure that its education reform dollars are well spent, it should consider the use of controlled randomized field trials that can be evaluated prior to implementing dramatic reforms statewide.

8. *Invest in an enhanced education data system so that the effectiveness of the state's education reforms can be better determined.*

California's education data system must be redesigned to allow researchers to link teachers and children with their achievement scores over time in order to better measure student gains from year to year. In this way, the state can more accurately measure the effects of specific reforms on student achievement. The creation of such a data system requires an adequate investment of time, money, and political will by the state and by local school districts; but ultimately the investment promises important returns related to the effectiveness of education reforms.

Conclusion

The results of our evaluation, a changing state policy context, and new class size reduction research in other states—all of these provide justification for reexamining California's current class size reduction policy. As suggested in our full report, the state can change some aspects of the CSR program without abandoning its commitment to smaller K–3 classes. Carefully controlled pilot programs can help determine what is working and why. 

To Learn More

For a discussion of the latest results from the Tennessee STAR experiment, see: "Class Size Reduction in Grades K–3." Finn, J. In: *School Reform Proposals: The Research Evidence*. Tempe, AZ: Education Policy Research Unit, Arizona State University, 2002.

For a more extensive bibliography of research and readings related to class size, see the references section of the CSR Research Consortium's capstone report available at: www.classsize.org

California Department of Education's Class Size Reduction web page: www.cde.ca.gov/classsize

Federal Class Size Reduction web page: www.ed.gov/offices/OESE/ClassSize/index.html

What We Have Learned About Class Size Reduction in California

CSR Research Consortium Members and Report Authors

American Institutes for Research (AIR)

George W. Bohrnstedt, lead author	Jamie Shkolnik
Lawrence W. Gallagher	Ed Wiley
Hiroyuki Hikawa	

RAND

Brian M. Stecher, lead author	J. R. Lockwood
Catherine H. Augustine	Daniel F. McCaffrey
Dionne Barnes	Marika J. Suttorp
Delia Bugliari	Georges Vernez

Policy Analysis for California Education (PACE)

Gerald C. Hayward, Sacramento
Michael W. Kirst, Stanford University

EdSource

Trish Williams	Miriam Rokeach
Mary Perry	Jackie Teague

WestEd

Joan McRobbie

The CSR Consortium thanks the following funders for their support of this four-year project:

California Department of Education	The Walter S. Johnson Foundation
The Walter and Elise Haas Fund	The San Francisco Foundation
The William and Flora Hewlett Foundation	The Stuart Foundation

EdSource is a not-for-profit 501(c)(3) organization established in California in 1977.

Independent and impartial, EdSource strives to advance the common good by developing and widely distributing trustworthy, useful information that clarifies complex K–12 education issues and promotes thoughtful decisions about California's public school system.

To learn more about our organization, please contact:

EdSource
4151 Middlefield Road
Suite 100
Palo Alto, CA
94303-4743
650/857-9604
Fax: 650/857-9618

E-mail:
edsource@edsource.org
Or visit us on the web: www.edsource.org

For data about every school and district in California, visit the Education Data Partnership: www.ed-data.k12.ca.us