

The  
**BALANCED  
VIEW:**

**Research-based  
information on timely  
topics**

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## CLASS SIZE

### *What Are the Issues?*

Across the nation, a bipartisan effort has pushed the issue of class size reduction to the top of state legislative agendas. More than 30 states, including California, Florida, New York, and Texas, have either passed class size legislation or are considering it. The growing national interest has been further fueled by the federal government's \$1.2 billion initiative to help schools hire more teachers and reduce class size to an average of 18 students in the early elementary grades.

Class size reduction is also very popular among parents and educators. A March 1997 *Wall Street Journal* poll found that 70 percent of adults believe that smaller classes will result in improved student learning. And a recent *Education Week* survey found that 83 percent of teachers and 60 percent of principals believe that classes should not exceed 17 students. For its part, the National Education Association, has been calling for reduced class size since 1960.

The popularity of class size reform is based in part on its intuitive appeal. Many feel that students receive more attention in smaller classes because less time is spent on discipline and administration and more time on teaching. The increased individualized attention, the thinking goes, translates to improved learning. But critics say that class size reduction is extraordinarily expensive, and that the benefits may not be significant enough to justify the costs. They argue that other strategies can be implemented to boost student achievement at much lower costs.

Researchers remain deeply divided over the issue. Despite decades of study, no definitive conclusions have been reached as to whether smaller classes can bring about lasting improvements in achievement. The ambiguity in the research makes decisions concerning class size among the more difficult school administrators must make.

### *Class Size in New York*

- As part of the federal class size effort, New York State will receive \$104 million to distribute to local schools. New York City is slated to receive the majority of these funds — \$61 million.
- In November 1998, the State Education Department initiated the Early Grade Class Size Reduction Program which provides aid to eligible districts to reduce class size to no more than 20 students per class in grades K-3.
- In his recent executive budget, Governor Pataki proposed to replace money earmarked for class size and related initiatives with a \$200 million block grant. But the State Assembly voted to restore class size funding at present law levels, i.e., \$75 million.

To help inform the decision-making process, this issue of the *Balanced View* summarizes what we do know from the research. We focus not only on the question of whether class size can make a difference in student achievement, but on questions of how and under what circumstances. We also examine issues of cost and discuss options for reducing class size that could help contain costs.

## What Research Tells Us about Class Size

More than 800 studies on class size have been conducted since the 1970s. Researchers have examined class size effects on student learning, educational practice, and educational quality. They have looked at class size outcomes for different types of students, different grade levels, and various subject areas. Enough research has been conducted to permit several comprehensive syntheses of individual studies. Although not all of the questions have been answered, nor all of the debates settled, some general conclusions about class size can be made that should prove useful to policy-makers. The following summary focuses on seven class size questions:

- Do reductions in class size improve student achievement?
- Do reductions in class size equally affect all types of students, all subject areas, and all grade levels?
- How small do classes need to be for students to obtain achievement benefits?
- How long must students be in small classes to obtain achievement benefits?
- What conditions are necessary to obtain a class size effect?
- What changes in instructional practice accompany class size reductions?
- What are the costs of class size reductions?

## Is class size related to student achievement?

To date, the only large-scale scientifically controlled study to

address this question is Project STAR. Undertaken in Tennessee, STAR was a four-year longitudinal experiment that assessed student achievement in three types of classes: small classes, averaging 13-17 pupils; regular classes with 22-25 students; and regular classes of 22-25 students with a full-time teacher aide. Students were randomly assigned to the class types upon entering kindergarten, and remained in the same class group until the end of third grade. In all, about 7,000 students from more than 300 classrooms in inner-city, urban, suburban, and rural schools participated in the study. Results indicated the following:

- Students in smaller classes consistently outperformed those in regular classes at every grade level and on every reading and mathematics achievement sub-scale. The differences were both statistically significant and educationally meaningful.
- Students in smaller classes experienced most of their achievement gains kindergarten; their achievement increased significantly in grade one, but only in reading. After that, these students maintained a constant achievement advantage over those in regular classes.
- Students from smaller classes were less likely to be retained in grade.
- There was no statistically significant evidence that providing teachers in regular classes with a full-time teacher aide improved student achievement.

A 10-year follow-up component to Project STAR, conducted after students were returned to normal classes, further showed:

- Students who had been in smaller classes continued to retain a statistically significant academic advantage over those from regular classes *through high school*. They had higher grades, took more challenging courses, had better graduation rates, and were more likely to attend college.

Recent research from class size projects in other states such as California, North Carolina, and Wisconsin also has shown positive results, although the findings have not been as dramatic as those observed in Tennessee. As for earlier class size studies, extensive reanalyses of the research—conducted by Glass & Smith, Robinson & Wittebols, and Slavin, among others—have generated different sets of conclusions, as have econometric studies on the topic, e.g., Hanushek and ETS.<sup>1</sup>

In summary, the largest and most scientifically rigorous experiment on class size, Project STAR, provides compelling evidence that smaller classes improve student achievement, at least in the primary grades, and that the benefits derived persist. Syntheses of earlier, less methodologically sound studies have led to more ambiguous conclusions.

## Does reduced class size equally affect all types of students, all subject areas, and all grade levels?

In general, the research suggests that there are differential benefits of reduced class size. Specifically, studies indicate the following:

- Economically disadvantaged, minority, low-achieving, and

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<sup>1</sup> The differences have less to do with the question, Is there a class size effect?, than with other related questions: why, under what circumstances, for whom, and at what cost?

exceptional students at both ends of the scale – gifted and disabled – benefit more from reductions in class size than their counterparts.

- Smaller classes are most beneficial for students in the primary grades, K-3. In grades 4-8, the effect is not as great. At the secondary level, the evidence is too diverse to draw firm conclusions.
- Reading and mathematics are the subject areas that improve the most as class size declines.

### How small do classes need to be for students to obtain achievement benefits?

The research suggests that achievement benefits become *noticeable* when class size is less than 20 students, and become *pronounced* for classes below 15 students. A change in class size within the 20-40 range produces minimal impact on the achievement of most students in most subject areas.

Unknown is the influence of the magnitude of the class size change on achievement. For example, reducing class size from 30 to 18 students is more dramatic than a change from 22 to 18 students; whether it makes more of a difference in student learning is unclear.

### How long must students be in small classes to obtain achievement benefits?

The best evidence on this question comes from Project STAR and a smaller study recently completed in North Carolina. This research indicates that the benefits of small classes mainly occur during the first year students are enrolled,

and are sustained – or slightly increased – after that. Researchers still cannot say, however, whether one year of small class exposure is as effective as three or four years.

### What conditions are necessary to achieve a class size effect?

Project STAR's impressive findings have influenced other states to enact class size reduction legislation. But STAR was conducted under controlled conditions, without which the positive effects of small classes may not have occurred. Among these conditions were the following:

- All STAR teachers were state certified and qualified to teach in their assigned grades.
- STAR's participating schools had sufficient space to create the additional classrooms needed to accommodate the class size reductions.
- Most of STAR students were white or African-American; there were very few nonnative English speakers.
- All STAR teachers had access to adequate materials and services.

Other research suggests that adequate professional development is essential for teachers to maximize the benefits of smaller classes.

### What changes in instructional practice accompany class size reductions?

Although some studies have found more favorable teaching practices in smaller classes, including a 1995 New York State investigation

(*Effects of Class Size in Special Education*, MAGI Educational Services), most research reports very few instructional differences between small and large classrooms. Project STAR, for example, conducted extensive analyses of teacher logs and failed to uncover any systematic differences in classroom management, type of instruction, or time on task among small, regular, and teacher-aide classes. Similarly, a well-designed Toronto study found, that while teachers *reported* changes in their teaching approaches – more individualized instruction, better classroom management, more frequent student assessment – the self-reported changes were not confirmed through classroom observation.

Findings such as these have led researchers to conclude that teachers do not automatically change their basic teaching behaviors when they move to small classes. Training and technical assistance, therefore, are needed if teachers are to make the transition from traditional large group lecture formats to more individualized and personalized forms of instruction.

### What are the costs of class size reductions?

Calculating the cost of a class size reduction program involves consideration of several ingredients:

- The magnitude of the change – the greater the reduction, the higher the costs.
- Teacher salaries and experience levels.
- The cost of added classrooms to accommodate the change.
- Additional operational costs such as costs for utilities, and

for custodial and clerical services.

The following examples illustrate these expenditures. In California, it is costing an additional \$800 per pupil per year to reduce class size to no more than 20 students in grades K-3. And this does not include the cost of the new required classrooms, estimated to be \$1.1 billion. Tennessee invested about \$600 million between 1991 and 1995 to implement its class size reduction program. And a plan in Philadelphia to reduce class size in grades K-3 from an average of 27 to 20 students would require hiring 1,000 new teachers at \$50 million annually, and constructing 35 new schools at \$470 million.

While these expenditures are high, some researchers say that the potential benefits of smaller classes may offset costs. In addition to academic gains, they cite studies showing that small classes reduce the need for special education, grade retention and disciplinary measures, and increase the likelihood of high school graduation—outcomes that translate into real savings.

The cost issue is further complicated by the widespread appeal of reduced class size among educators, politicians, and taxpayers. For policymakers convinced of class size benefits, yet concerned about costs, this strong backing may be enough to justify an investment in smaller classes.

## Class Size Options

Across-the-board reductions in class size at the elementary level may prove to be fiscally impossible in most school districts. But there are alternative ways of implement-

ing class size reduction programs that can help contain the costs.

These include the following:

- *Targeting the resources to grades K-1.* STAR researchers found that virtually all of the achievement gains made by students in small classes occurred in either kindergarten or first grade. Some states, therefore, have initiated their class size reduction programs in kindergarten or in grades K-1, with the intent of expanding efforts to the second and third grade over time.
- *Targeting the resources to schools serving poor and/or minority students.* One of the more consistent findings from the class size research is the substantial benefit of smaller classes on disadvantaged and minority children. Certain states, thus, have directed class size resources to schools serving large numbers of the at-risk population—schools that need the most assistance.
- *Redistributing resources.* The costs for reduced class size can be defrayed by tapping other funding sources. A number of districts, for example, have used Title I funds as a means of reducing class size in high-poverty schools. Other districts have applied for waivers to collapse various federal and/or state funding streams in order to apply the monies to class size reduction programs.
- *Rethinking school schedules.* Some districts have devised alternative schedules to reduce class size for a portion of the day. One variation requires that all

teachers and specialists teach 15 students in core academic subjects (reading, language arts, and math) for three hours a day. For the remaining time, subjects are taught in regular class sizes averaging 25 students.

- *Combining small classes with other strategies.* Certain researchers have proposed that smaller classes be used sparingly, and that they be coupled with larger comprehensive strategies shown to be effective for at-risk students. These interventions include early childhood education for three- and four-year-olds, extended day kindergarten, computer-assisted instruction, cooperative learning, and tutoring.

Whatever class size option is selected—whether targeting certain types of students, grade levels, or subject areas, or combining class size reduction with other interventions—policymakers must weigh a range of trade-offs. Educators with first hand experience in reducing class size offer the following suggestions to assist in policy choices: implement the class size reduction program gradually, conduct ongoing evaluation to assess the effort, allow flexibility within the program, and beware of a one-size-fits-all approach.

Finally, the lessons learned from the experiences of others tell us that class size reduction is not a silver bullet. It is one approach that has been shown to be effective in improving early learning. And it can be implemented in different ways. Depending on *how* schools modify class size, the potential academic benefits may or may not be realized.