Reducing Class Size: Is it Worth the Investment?

By Tim Weldon
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Conventional wisdom would seem to indicate that smaller class sizes are superior to larger classes. After all, they would appear to provide opportunities for more individualized instruction, fewer discipline problems and, ultimately, increased student achievement. However, research has provided contradictory results on the relationship between class size and student achievement. This brief looks at the value of reduced class size in the light of shrinking or stagnant education budgets.

Florida voters sent state leaders a conflicting message during the 2010 election. On one hand, they elected a conservative Republican legislature and governor running on a platform of controlling government spending. At the same time, they rejected Amendment 8, which would have eased class size restrictions put in place by a ballot initiative in 2002. The defeat of Amendment 8 will cost taxpayers $40 billion over the next decade, according to the Florida Education Finance Program.

Clearly, Florida voters believe the investment in smaller class sizes is worth the expense. Questions linger, however, among education researchers over the value of smaller class sizes.

Consider the following conclusions reached in two policy studies: In a report published in the American Education Research Journal, Jeremy Finn and Charles Achilles wrote, “This research leaves no doubt that small classes have an advantage over larger classes in reading and math in the early primary grades.” Another study by Chester Finn and Michael Petrilli, however, stated, “There is no credible evidence that across-the-board reductions in class size boost pupil achievement.”

Those conflicting research findings pose a dilemma for legislators and other state policymakers in making critical decisions regarding class sizes. Without clear-cut evidence demonstrating students in smaller classes achieve at a higher rate than those in larger classes, some policymakers might wonder whether investing in smaller classes is worth the cost, particularly during a time of increasingly tight budgets.

The case for smaller classes
According to the National Center for Education Statistics, the national ratio of students to teachers declined from 17.6 in 1990 to 15.8 in 2008. That number is artificially low because it includes special education and other specialized teachers who typically have much smaller classes than most teachers do. The U.S. Department of Education estimates the current average class size in departmental instruction—such as English, science, mathematics and social studies—is closer to 25 students per teacher. The pupil-teacher ratio is determined by dividing the number of students at a given period
of time by the full-time equivalent number of classroom teachers serving those students.

Despite the expense of employing more teachers to reduce pupil-teacher ratio, one study concludes reducing class sizes from 22 to 15 in grades K-3 actually results in a $2 return on every $1 spent. That calculation is based on the assumption that the smaller classes will result in increased student achievement and increased earnings later in life.³

One study found that when compared to students in average-sized classes, students in smaller classes in the early years take more advanced courses in high school and are more likely to graduate in the top 10 percent of their class.⁴ Another study found that African-American students who attended small classes in the early elementary years were more likely to take the SAT and ACT in high school. This study estimated that smaller elementary class sizes alone could reduce the black/white gap in SAT and ACT participation by 60 percent.⁴

The National Education Association also argues reducing the pupil-teacher ratio helps in the early identification of learning disabilities and fewer special education placements in later grades, improves high school graduation rates, and results in fewer incarcerations and improved student behavior.⁸

The most highly regarded study of the relationship between pupil-teacher ratio and achievement is the four-year Student/Teacher Achievement Ratio, known as Project STAR, which began in 1984 and tracked more than 7,000 students in 79 schools in Tennessee. The students were randomly assigned to one of three groups: small class (13 to 17 students per teacher), regular class (22 to 25 students per teacher), and regular-with-aide class (22 to 25 students with a teacher and full-time teacher’s aide).

The interventions began when students entered kindergarten and continued through third grade. Project STAR demonstrated that students in smaller classes scored higher than students in larger classes on standardized and curriculum-based tests. This was true for white and minority students and for students from inner-city, urban, suburban and rural schools. In each grade, minorities and disadvantaged students enjoyed greater small-class advantages than whites on some or all measures. In addition, the schools retained a smaller proportion of students in the smaller classes and identified more of students’ special needs early. In 1999, more than a decade after the study began, researchers reported the students who had been placed in small classes in grades K-3 had better high school graduation rates, higher grade point averages and were more likely to pursue postsecondary education.⁹

Likewise, a 2001 study by researchers at the Education Policy Studies Laboratory at Arizona State University and the University of Wisconsin-Milwaukee found a class size reduction program known as the Student Achievement Guarantee in Education in Wisconsin, known as Project SAGE, had resulted in higher achievement for children living in poverty.¹⁰

Project SAGE was enacted by state law in 1995 as a five-year pilot program to determine whether smaller class sizes in elementary school raise academic achievement for disadvantaged students. SAGE classrooms had a student-teacher ratio of 12 to 15 students per teacher, compared to 21 to 25 students per teacher in comparison classes. Though they started first grade with the same academic profiles, African-American students made greater gains in the small SAGE classes than African-Americans in larger classes.¹⁰

A report by the California Senate Office of Research concluded a partial list of positive outcomes associated with class size reductions includes:
• For students
  ◦ More individual attention;
  ◦ Increased time on task;
  ◦ Increased opportunities to participate;
  ◦ Improved self-image; and
  ◦ Improved attendance.

• For teachers
  ◦ More job satisfaction;
  ◦ More activities initiated by the teacher, especially enrichment activities;
  ◦ Less time spent on discipline; and
  ◦ Better ability to assess and monitor student performance.¹¹

The National Education Association recommends an optimum class size of 15 students in regular programs, especially in the early grades, and a proportionately lower number in programs for students with exceptional needs, including children with disabilities and English language learners.¹²

**Class size does not matter**

Not all research has come to the same conclusion as the STAR study. One conducted by Matthew Chingos, a research fellow at Harvard University’s Program on Educational Policy and Governance, analyzed reading and math test scores for all Florida students in grades four through eight between 2001 and 2007.

In 2002, Florida voters approved an amendment that specifically mandated that, by the beginning of the 2010–11 school year, class sizes were to be reduced to no more than 18 students in pre-kindergarten through third grade, 22 students in fourth through eighth grade, and 25 students in ninth through 12th grade.

According to the Florida Department of Education, the amendment resulted in a drop in pupil-teacher ratio in grades four through eight from 24.3 in 2003 to 18.6 in 2009 at a cost to taxpayers of approximately $4 billion per year.

In his study, Chingos evaluated the impact Florida’s statewide class size reduction policy had on student achievement. He found students attending schools in districts that were required to reduce class size did no better on state assessments than students in schools with higher pupil-teacher ratios. His study also showed no significant impact on student absenteeism and behavior.¹³

Other research analysts have concluded that class size reduction does not have a significant effect on achievement. One such study examined trend data from the 1950s to 1986 and did not find any consistent relationship between class size and standardized test scores. In the U.S. Department of Education report, Class size and public policy: Politics and panacea, author Tom Tomlinson concluded existing research did not justify a policy to reduce class size in view of the costs involved.¹⁴

Similarly, a review of research published in Educational Evaluation and Policy Analysis concluded, “a system-wide class reduction policy would produce only modest gains in student achievement and incur an unjustifiably high cost.”¹⁵

**What states are doing**

According to the Education Commission of the States, 25 states have policies addressing class-size reductions to a level below 22 students per classroom. (State-by-state data of pupil-teacher ratios can be found at the end of this report.) The vast majority of these policies target students in elementary grades, particularly K-3.
For example, Illinois has a statute creating a voluntary program that provides grants to reduce class size to no more than 20 students per teacher in grades K-3. Eligibility is limited to districts with schools serving grades K-3 that are on the academic warning list or the academic watch list.14

Nevada’s economic woes led legislators to enact Assembly Bill 4[4], which was signed into law in February 2010. It gave school districts a temporary reprieve from class size caps in grades 1-3 by allowing them to increase maximum class sizes by up to two students above the caps enacted by the legislature in 1989.

The new law contains the following provisions for the 2010-11 school year:

- School districts may increase class sizes in grades 1-2 from a maximum of 16 to a maximum of 18.
- The maximum class size in third grade has increased from 19 to 21.
- Any funds a district would have used to achieve the lower class sizes in grades 1-3 must be used to minimize impact of budget cuts on class sizes in grades 4-12.

Texas, which faces a potential budget shortfall of more than $20 billion over the next biennium, is considering increasing its cap on pupil-teacher ratio in the 2011 legislative session. Texas currently limits the number of students in grades K-4 to 22 unless a school obtains a waiver. The Senate Education Committee has recommended easing class size limits as a cost-saving measure.

In a speech in November 2010, U.S. Education Secretary Arne Duncan called for class size flexibility. “In our blueprint for reauthorizing the Elementary and Secondary Education Act, we support shifting away from class-sized based reduction that is not evidence-based. It might be that districts would vary class sizes by the subject matter or the skill of the teacher, or that part-time staff could be leveraged to lower class size during critical reading blocks,” he said.

Duncan predicted some school districts in coming years will be forced to weigh class size increases against the loss of music, arts and after-school programs. He also pointed out that, “Many high-performing education systems, especially in Asia, have substantially larger classes than the United States.” For example, he said the average class size is 36 students per teacher in South Korea and 33 students per teacher in Japan.12

Conclusion
Reducing class size is widely considered one of the most expensive education reform measures a state can take. As state policymakers look for ways to cut costs and respond to budget deficits, many will undoubtedly insist on spending money only on proven policies they can reasonably expect to produce results.

While conventional wisdom would seem to indicate that smaller class sizes have benefits over larger ones, legislators and other policymakers will likely need to be convinced that the additional funds they spend to hire thousands more teachers and build thousands of new classrooms will be worth the cost. At this time, the evidence is murky at best, contradictory at worst, making it difficult for policymakers to make well-informed decisions whether to spend money to continue strict caps on pupil-teacher ratios.

References:
National Center for Education Statistics (2010).
6 Health and Education Studies Research Operative Services. "Class Size Research [7]."
8 National Education Association."Class Size Reduction: A Proven Reform Strategy [6]."
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