

### Why does class size matter?

For decades, researchers have tried to determine whether or not class size reductions significantly improve students' educational performance.

Recently, several studies have provided a great deal of information about class size reductions and have answered some important questions about this intervention. Researchers have analyzed how the size of a class affects the quality of education.<sup>1</sup>



Studies from Tennessee, Wisconsin, and elsewhere demonstrate that students who are assigned to smaller classes in kindergarten through 3rd grade do better academically. They score higher on tests, receive better grades, and exhibit improved attendance.<sup>2</sup>

When students are in smaller classes:

- They receive more individualized attention.
- There are fewer behavioral disruptions.
- Teachers may have an easier time checking for student understanding and answering questions.

One of the most frequently cited studies in determining the effects of class size is the Tennessee STAR experiment. In this experiment, students were randomly assigned to classes of varying sizes, and outcome data, including test scores, was collected for several years. The study provided compelling evidence that smaller classes in the early grades help improve achievement outcomes and set the foundation for future academic benefits.<sup>2,3</sup>

### Evidence from Child-Parent Centers

The Child-Parent Center preschool to 3<sup>rd</sup> grade (CPC P-3) program is an intervention for students from low-income communities or for those who are at elevated risk of underachievement. In the program, class sizes in preschool are limited to 17 students for every 2 adults (teacher and classroom assistant). Classes in K-3 are limited to 25 for every 2 adults.

Students from these schools have demonstrated lifelong positive academic outcomes including increased high school graduation rates and lower rates of assignment to special education.

Relative to comparison groups, students who participated in the CPC program in preschool and/or K-3 have experienced many lifelong positive outcomes, including:

- Higher reading and math achievement
- Lower rates of special education and grade retention
- Higher rates of high school graduation<sup>4</sup>

For example, 15 percent of CPC school-age participants received special education services from K-12 compared to 21 percent for students not in the program.

## Class Size and the Achievement Gap

The Tennessee STAR, CPC, and other studies show the positive benefits of small classes. Those students who are most likely to experience test score gains from smaller class sizes are those most at-risk for low achievement. Some research shows that small class sizes may be an important strategy in reducing the achievement gap. Alan Krueger of Princeton estimated that reducing class size in the early grades could potentially narrow the achievement gap by about 38 percent.<sup>5</sup>

## What conclusions can be made about class size reductions?

Washington State Institute for Public Policy (WSIPP) conducted an analysis of previously published class size studies from 1989 to 2006.<sup>6</sup> They calculated the effect of a one-unit change in class size on test scores. The research explored both costs and benefits of

class size reductions. The report found that reducing class sizes in kindergarten through 2nd grade is consistently associated with positive gains in academic test scores. There are smaller, significant gains in grades 3-6. Students from low-income families benefit more from class size reductions than do students from higher-income families.

## Recommendations

Based on the available research, the HCRC makes the following recommendations regarding class size and ratios:

- Preschool classes should be limited to 17 children and have a minimum of 2 teaching staff.
- Kindergarten and grade 1–3 classes should be limited to 25 children and have a minimum of 2 teaching staff.

## Estimated Annual Per-Student Cost of Lowering K-12 Class Size: Washington State

Class size	Operating costs		Capital costs				Total annual cost per student for one unit drop in average cost size
	Salary cost per student for a given classroom size	Change in salary cost per student for one unit drop in average class	Number of classrooms needed for a given classroom size	Change in number of classrooms for one unit drop in average class size	Annual capital amortization costs for one unit drop in average class size	Annual capital payment per student	
10	\$6,690	\$608	102,731	9,339	\$112,789,473	\$110	\$718
15	\$4,460	\$279	68,487	4,280	\$77,542,763	\$75	\$354
17	\$3,935	\$219	60,430	3,357	\$68,926,900	\$67	\$286
20	\$3,345	\$159	51,366	2,446	\$59,080,200	\$58	\$217
30	\$2,230	\$72	34,244	1,105	\$40,022,071	\$39	\$111

Assumed parameters in cost calculation: Annual average teacher salary in an average classroom (non-wage benefits incl., 2006 dollars)=\$66,900; Total number of public K-12 students in WA=1,027,312; Construction costs for K-12 classrooms (dollars per square foot, 2006 dollars)=\$180; Length of bonds for new construction=25; Interest rate on bonds = 5.5%

## References

- 1 U.S. Department of Education. (1999). Reducing Class Size: What Do We Know? Retrieved from <http://www.classsizematters.org/research-and-links/>
- 2 Finn, J. (2002). "Class Size Reduction, Grades K-3," in: *School Reform Proposals: The Research Evidence*, ed. A. Molnar.
- 3 Mosteller, F. (1995). The Tennessee study of class size in the early school grades. *The Future of Children*.
- 4 Reynolds, A. J., Temple, J. A., Robertson, D. L., & Mann, E. A. (2002). Age 21 cost-benefit analysis of the Title I Chicago Child-Parent Centers. *Educational Evaluation and Policy Analysis*, 24, 267 - 303.
- 5 Krueger, A. B., & Whitmore, D. M. (January 2001). "Would Smaller Classes Help Close the Black-White Achievement Gap?" in John E. Chubb and Tom Loveless, eds., *Bridging the Achievement Gap*, Brookings Institution Press 2002; also available at <http://arks.princeton.edu/ark:/88435/dsp01w66343627>
- 6 Aos, S., Miller, M., & Mayfield, J. (March 2007). #07-03-2201. Benefits and Costs of K-12 Educational Policies: Evidence-Based Effects of Class Size Reductions and Full-Day Kindergarten. <http://www.wsipp.wa.gov/Reports/07-03-2201>