# 1. Small Classes / Small Schools

## *a. Research Consensus*:

A consensus of research indicates that class size reduction in the early grades leads to higher student achievement. Researchers are more cautious about the question of the positive effects of class size reduction in 4th through 12th grades. The significant effects of class size reduction on student achievement appear when class size is reduced to a point somewhere between 15 and 20 students, and continue to increase as class size approaches the situation of a 1-to-1 tutorial. The research data from the relevant studies indicate that if class size is reduced from substantially more than 20 students per class to below 20 students, the related increase in student achievement moves the average student from the 50th percentile up to somewhere above the 60th percentile. For disadvantaged and minority students the effects are somewhat larger. Students, teachers, and parents all report positive effects from the impact of class size reductions on the quality of classroom activity.

*For more information, see*:
Pritchard, I., (1999). *Reducing Class Size What Do We Know?* National Institute on Student Achievement, Curriculum and Assessment, Office of Educational Research and Improvement, U.S. Department of Education.

To obtain copies of *Reducing Class Size: What Do We Know?* (SAI 98-3027), or ordering information on other U.S. Department of Education products, call toll-free 1-877-4ED-Pubs (877-433-7827) or write to the Education Publications Center (ED Pubs), U.S. Department of Education, P.O. Box 1398 , Jessup, MD 20794-1398. TTY/TTD 1-877-576-7734 / FAX 301-470-1244. http://www.ed.gov/pubs/ReducingClass/Class_size.html

## *b. Research on Impact of Student/Teacher Ratios*:

Analyzed a substantial database about the Texas educational system (from over 800 districts containing more than 2.4 million students). For first through seventh grades, it was found that district student achievement fell as the student/teacher ratio increased for every student above an 18 to 1 ratio. Measures of teacher quality (that is, teacher literacy skills and professional experience) were even more strongly related to higher student scores.

*For more information, see*:
Ferguson, R. F. (1991). Paying for public education: New evidence on how and why money matters. *Harvard Journal on Legislation, 28* (2): 465-498.

## *c. Review of Research*:

Review of more than 100 studies using a related cluster analysis approach to group together similar kinds of research studies (e.g., same grade level, subject area, student characteristics). Reducing class size was found especially promising for disadvantaged and minority students. At the same time, researchers caution that positive effects were less likely if teachers did not change their instructional methods and classroom procedures in the smaller classes.

*For more information, see:*
Robinson, G. E. and Wittebols, J H. (1986). *Class size research: A related cluster analysis for decision-making*. Arlington, VA: Education Research Service.

## *d. Burke County Schools, NC*:

In 1990, Burke County, North Carolina pilot-tested and then phased in a class size reduction project in the county school district. Compared to a matched group of students in classes that had not been phased into the smaller class initiative, students in the smaller classes outperformed the comparison group in first, second, and third grades on both reading and mathematics achievement tests. Based on independent observations of classroom activity, the percentage of classroom time devoted to instruction in the smaller classes increased from 80% to 86% compared to the larger classes, while the percentage of time devoted to non-instructional activities such as discipline decreased from 20% to 14%.

*For more information, see*:
Egelson, P., Harman, P., and Achilles, C. M. (1996). *Does Class Size Make a Difference? Recent Findings from State and District Initiatives*. Washington, DC: ERIC Clearinghouse. ED 398644.

*e. Project STAR:* The U.S. Department of Education views the following two studies as providing the strongest evidence available to date regarding the positive effects of class size reduction. The evidence from student testing in STAR showed that the students in the smaller classes outperformed the students in the larger classes, whether or not the larger class teachers had an aide helping them. Project STAR found that:

- Smaller class students substantially outperformed larger class students on both standardized (Stanford Achievement Tests) and curriculum-based tests (Basic Skills First). This was true for both white and minority students in smaller classes, and for smaller class students from inner city, urban, suburban, and rural schools.
- The positive achievement effect of smaller classes on minority students was double that for majority students initially, and then was about the same.
- A smaller proportion of students in the smaller classes was retained in-grade, and there was more early identification of students' special educational needs.

The Lasting Benefits Study began a follow-up study to examine whether the effects of the smaller class size experience persisted when students were returned to normal size classes. The study is still ongoing. To date, the research findings include:

- In fourth grade, students from the smaller classes still outperformed the students from the larger classes in all academic subjects.
- In fourth grade, students from the smaller classes were better behaved than students from the larger classes (i.e., student classroom effort, initiative, and disruptiveness).

I. Pritchard, *Reducing Class Size: What Do We Know?* National Institute on Student Achievement, Curriculum and Assessment, Office of Educational Research and Improvement, U.S. Dept of Education. March 1999. 1-877-4ED-Pubs. http://www.ed.gov/pubs/ReducingClass/

*f. Project Challenge*: Beginning in 1990, Tennessee implemented the findings of Project STAR in 16 of the state's poorest school districts. They phased in smaller classes at the kindergarten through third-grade levels in districts with the lowest per capita income and highest proportion of students in the subsidized school lunch program. To evaluate the results of this effort, school district rankings based on student performance as measured on a statewide achievement test were compared. Project Challenge districts moved from near the bottom of school district performance to near the middle in both reading and mathematics for second grade. In addition, in-grade retention of students was reduced in those districts where smaller classes were implemented.

*For more information, see*:
I. Pritchard, *Reducing Class Size: What Do We Know?* National Institute on Student Achievement, Curriculum and Assessment, Office of Educational Research and Improvement, U.S. Dept of Education. March 1999. 1-877-4ED-Pubs. http://www.ed.gov/pubs/ReducingClass/

*g. Student Achievement Guarantee in Education (SAGE)*: Beginning in 1996-97, Wisconsin began a class size reduction program called the Student Achievement Guarantee in Education (SAGE) Program. SAGE first-grade students performed consistently better than comparison students in mathematics, reading, language arts, and total scores for the Comprehensive Test of Basic Skills. The achievement gap lessened between white and African-American students in the SAGE smaller classes in the first grade, in contrast to a widening of the gap between white and African-American students in the larger classes of the comparison schools.

*For more information, see*:
Molnar, A., Percy, S., Smith, P., and Zahorik, J. (December 1998). *1997-98 Results of the Student Achievement Guarantee in Education (SAGE) Program*. Milwaukee, WI: University of Wisconsin-Milwaukee.

*h. Impact on Expenditures*: Based on an analysis of data on fourth-graders in 203 districts and eighth-graders in 182 school districts from across the United States, studies found that class size served as an important link between school education spending and student mathematics achievement. At the fourth-grade level, lower student/teacher ratios are positively related to higher mathematics achievement. At the eighth-grade level, lower student/teacher ratios improve the school social environment, which in turn leads to higher achievement. The largest effects for mathematics achievement gains occurred in districts where there were below-average socioeconomic status students, accompanied by above-average teacher costs.
*For more information, see*:
Wenglinsky, H. (1997). *When money matters: How educational expenditures improve student performance and how they don't*. Princeton, NJ: The Educational Testing Service, Policy Information Center.

## Additional References related to Class Size Reduction


1. Achilles et al. 1996 and AIR, RAND, PACE, and EdSource. 1998. Evaluating California's Class Size Reduction Initiative: The Year 1 Data Collection Component. Grant proposal submitted to the Koret Foundation, Palo Alto, CA.
2. Achilles, Charles M., Barbara A. Nye, Jayne B. Zaharias, B. DeWayne Fulton, and C. Cain. 1996. "Education's Equivalent of Medicine's Framingham Heart Study." Washington, DC: ERIC Clearinghouse. ED 402677. See also Mosteller, Frederick. 1995. "The Tennessee Study of Class Size in the Early School Grades." The Future of Children 5 (2): 113-127.
3. California Senate. "Class Size Reduction." S.B. 804. Chaptered August 18, 1997.
4. Egelson, Paula, Patrick Harman and Charles M. Achilles. 1996. Does Class Size Make a Difference? Recent Findings from State and District Initiatives. Washington, DC: ERIC Clearinghouse. ED 398644. See also Finn 1998.
5. Ferguson, Ronald F. 1991. "Paying for public education: New evidence on how and why money matters." Harvard Journal on Legislation 28 (2): 465-498.
6. Finn, Jeremy D. 1998. Class size and students at risk: What is known? What is next? Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement, National Institute on the Education of At-Risk Students.
7. Finn 1998 and Charles M. Achilles, 1996. "Students achieve more in smaller classes." Educational Leadership 53 (5): 76-77.
8. Finn 1998. Nye, Barbara, B. DeWayne Fulton, Jayne Boyd-Zaharias, and Van A. Cain. 1995. The Lasting Benefits Study, Eighth Grade Technical Report. Nashville, TN: Center of Excellence for Research in Basic Skills, Tennessee State University.
9. Florida Department of Education. Office of Policy Research. 1998. "The relationship of school and class size with student achievement in Florida: An analysis of statewide data." www.firn.edu/doe/bin00048/home0048.htm.
10. Glass, Gene V., Leonard S. Cahen, Mary L. Smith, and Nikola N. Filby. 1982. School class size: Research and policy. Beverly Hills, CA: Sage.
11. Greenwald, Rob, Larry V. Hedges, and Richard D. Laine. 1996. "The effect of school resources on student achievement." Review of Educational Research 66 (3): 361-396. See also Hanushek, Eric A. 1996. "A more complete picture of school resource policies." Review of Educational Research 66 (3): 397-409 and Greenwald, Rob, Larry V. Hedges, and Richard D. Laine. 1996. "Interpreting research on school resources and student achievement: A rejoinder to Hanushek." Review of Educational Research 66 (3): 411-416.
12. Krueger, Alan. March 1998. Experimental Estimates of Education Production Functions. Princeton University and NBER.
13. Mitchell, Douglas, Christi Carson, and Gary Badarak. 1989. How Changing Class Size Affects Classrooms and Students. Riverside, CA: California Educational Research Cooperative, University of California.
14. Molnar, Alex, Stephen Percy, Phillip Smith, and John Zahorik. December 1998. "1997-98 Results of the Student Achievement Guarantee in Education (SAGE) Program." Milwaukee, WI: University of Wisconsin-Milwaukee.
15. Mosteller 1995, Finn 1998, and Kickbusch, Ken. 1996. "Class Size." Madison, WI: Wisconsin Education Association Council, Professional Development Division. www.weac.org/resource/may96/classize.htm
16. Mosteller, Frederick, Richard J. Light, and Jason A. Sachs. 1996. "Sustained Inquiry in Education: Lessons from Skill Grouping and Class Size." Harvard Educational Review 66 (4): 797-842.
17. Mueller, Daniel J., Clinton I. Chase, and James D. Walden. 1988. "Effects of Reduced Class Size in Primary Classes." Educational Leadership 45 (7): 48-50.
18. Odden, Allan. 1990. "Class size and student achievement: Research-based policy alternatives." Educational Evaluation and Policy Analysis 12 (2): 213-227.
19. Robinson, Glen E. and James H. Wittebols. 1986. Class size research: A related cluster analysis for decision-making. Arlington, VA: Education Research Service.
20. Sturm, Pepper. 1997. "Nevada's Class-Size Reduction Program." Carson City, NV: Senate Committee on Human Resources. www.leg.state.nv.us/lcb/research/bkground/97-07.HTM. See also Egelson et al. 1996.
21. Texas Education Agency. 1998. "Update on Class Size Waivers, Bilingual Education Exceptions, and Waivers for English as a Second Language." www.tea.state.tx.us/sboe/schedule/9801/dppef010.html
22. Tomlinson, Tom. 1988. Class size and public policy: Politics and panaceas. Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement.
23. Wenglinsky, Harold. 1997. When money matters: How educational expenditures improve student performance and how they don't. Princeton, NJ: The Educational Testing Service, Policy Information Center.
24. Wright, Edgar N., Stanley M. Shapson, Gary Eason, and John Fitzgerald. 1977. Effects of Class Size in the Junior Grades: A Study. Toronto, Ontario: Ontario Ministry of Education, Ontario Institute for Studies of Education. See also Molnar et al. 1998.


*Reference List from*: http://www.ed.gov/pubs/ReducingClass/Class_size.html