

**Reference Desk Response No. 323:  
Class Size and Student Achievement**

Question:

1. What does the research say about the effect of class size on student achievement?
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**Report:**

Following an established REL-NEI Reference Desk research protocol, we conducted a search for research reports as well as descriptive and policy-oriented briefs and articles in this area. The sources included federally funded organizations, additional research institutions, several educational research databases, and a general Internet search using Google and other search engines. We also searched for appropriate organizations that may act as resources on this issue. We have not done an evaluation of these organizations or the resources themselves, but offer this list to you for your information only.

Our researchers have found a number of resources that point to the impact of class size on student achievement. "When it is planned thoughtfully and funded adequately," evidence suggests that students in smaller class sizes in Kindergarten through grade 3 show gains in reading, language arts, and mathematics (see Biddle and Berliner, 2002 below). Other studies on class size reduction demonstrate that students in smaller classes outperform students in regular-size classes on achievement tests (see Reichardt, 2001 below). Much of the research focuses on primary grades and early childhood so the articles provided below reflect studies on K-3 as well as preschool classrooms.

In addition, the resources point to the impact of small class size on different student subgroups. One report suggests that, "Small classes help minority and low-income students the most. Teachers in smaller classes give students more individual attention and have fewer discipline problems" (see, C.L. Thompson, 2001, below).

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**1.1. Reducing Class Size: Choices and Consequences.** *Reichardt, R.; April 2001; Mid-Continent Research for Education and Learning; Policy Brief; 8 pages.*

Source: mcrel.org

([http://www.mcrel.org/PDF/PolicyBriefs/5012PI\\_PBReducingClassSize.pdf](http://www.mcrel.org/PDF/PolicyBriefs/5012PI_PBReducingClassSize.pdf))

"The strongest evidence that smaller class sizes improve student performance comes from Tennessee [STAR Study]...kindergarten through third-grade students were randomly assigned to smaller classes (13-17 students), regular classes (22-26 students), and regular classes with an aide...Word and her colleagues (1990)...found that students in the small classes significantly outperformed students in regular classes on standardized reading and mathematics tests. No difference in performance was found between regular classes and classes with aides.

Subsequent studies found that students from the smaller classes continued to outperform students from the regular-size classes on achievement tests through middle school, with some indication of improved performance and behavior through high school...Test scores of minority students improved more than those of non-minority students."

**1.2. What Research Says about Small Classes and Their Effects.** *Biddle, B. J., Berliner, D.C.; 2002; Policy Perspectives, part of In Pursuit of Better Schools: What Research Says series; 24 pages.*

Source: Wested.org

([http://www.wested.org/online\\_pubs/small\\_classes.pdf](http://www.wested.org/online_pubs/small_classes.pdf))

The article examines various studies on class size, which include kindergarten through third grade reductions such as the Student Achievement Guarantee in Education (SAGE) program. "Findings so far available have indicated larger gains for students from small classes—in achievement scores for language arts, reading, and mathematics – that are roughly comparable to those from the STAR project" (p. 12).

General conclusions put forth by the authors include:

- "When it is planned thoughtfully and funded adequately, long-term exposure to small classes in the early grades generates substantial advantages for students in American schools, and those extra gains are greater the longer students are exposed to those classes;
- Extra gains from small classes in the early grades are larger when class size is reduced to less than 20 students;
- Extra gains from small classes in the early grades are found for various academic topics and for both traditional measures of student achievement and other indicators of student success" (page 14).

**1.3. The Lessons of Class Size Reduction. First in America Special Report.** *Thompson, C.L., Cunningham, E. K.; 2001; ERIC Document # ED465003.*

Source: ERIC

([http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content\\_storage\\_01/0000019b/80/1a/0f/9a.pdf](http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/1a/0f/9a.pdf))

"This report summarizes research on the effects of class size reduction, outlines lessons learned from large-scale class size reduction initiatives in California and Wisconsin, and draws out implications of the research and lessons for class size reduction in North Carolina. The evidence that smaller classes promote increased learning is strongest in grades K-3. The longer students are in small classes, the more they benefit. Small classes help minority and low-income students the most. Teachers in smaller classes give students more individual attention and have fewer discipline problems. Though research in California and Wisconsin has found positive results of small class size, the states faced several barriers to reducing class size, including a shortage of high quality teachers; lack of adequate facilities, equipment, and materials; and lack of sufficient funding."

**1.4. Class size: What's the best fit?** *Barnett, W. S.; Schulman, K.; & Shore, R.; 2004; Preschool Policy Matters, a publication of the National Institute for Early Education Research.*

Source: The National Institute for Early Education Research

(<http://nieer.org/resources/policybriefs/9.pdf>)

This policy brief reviews research that has looked at the effects of smaller class sizes in the early years. It reviews findings from the National Institute of Child Health and Human Development (NICHD) Study of Early Child Care, which looked at children in child care in their first few years of life, and the National Day Care Study, which randomly assigned 3- and 4-year-olds to different preschool classrooms. In the NICHD Study of Early Child Care, children in classrooms that met more recommended standards for staff-child ratios, group sizes, teacher/caregiver training and education exhibited higher language comprehension, better school readiness, and fewer behavior problems when entering preschool. Additionally, in the National Day Care Study, children who were in smaller classes had "greater gains in receptive language, general knowledge, cooperative behavior, and verbal initiative and showed less hostility and conflict in their interactions with others" (p.4). The brief also reviews findings from several studies looking at children in grades K-3, where randomized control studies have been conducted. Overall this brief states that, "studies show that class size...not only has an impact on the quality of the environment but also on children's outcomes." (p. 4)

## Additional Organizations to Consult

- **SERVE Center**  
(<http://www.serve.org/SDImprov/classsizelinks.php>)  
SERVE at the University of North Carolina at Greensboro is a “university based research, development, dissemination, evaluation, and technical assistance center. Its mission is to support and promote teaching and learning excellence in the Pre-kindergarten to Grade 12 education community.” SERVE provides a list of articles and resources about class size reduction.
- **CSR Research Consortium**  
(<http://www.classize.org/>)  
CSR is “composed of major California research organizations working in partnership on a four-year, comprehensive study to evaluate the implementation and impact of California’s class size reduction initiative under a contract with the California Department of Education. The evaluation was legislatively mandated and based on a research plan adopted by the State Board of Education. The Consortium is headed by the American Institutes for Research (AIR) and RAND and involves Policy Analysis for California Education (PACE), WestEd, and EdSource.” This partnership organization was referenced in the Office of Elementary and Secondary Education’s “Class-Size Reduction Myths and Realities.”

## Resources on Class Size in General

- **Key lessons: Class Size and Student Achievement.** *Caliber Associates; 2005; Center for Public Education.*  
(<http://www.readingrockets.org/articles/31469>)  
This resource lists key lessons learned about class size and achievement, with primary references. The “early years” focus is on K-3, the ages for which most research on class size has been conducted. Overall, the research suggests that smaller class sizes (18 or fewer students) is linked to achievement, and has lasting effects, especially when class size is reduced over multiple years.
- **Perspectives on Class Size Reduction.** *Graue, E., Oen, D., Hatch, K., Rao, K., Fadali, E.; 2005; A paper presented at the symposium Early Childhood Policy in Practice: The Case of Class Size Reduction at the annual meeting of the American Educational Research Association.*  
Source: Found through general internet search using Google  
([http://varc.wceruw.org/sage/Perspectives\\_on\\_Class\\_Size\\_Reduction.pdf](http://varc.wceruw.org/sage/Perspectives_on_Class_Size_Reduction.pdf))  
This literature review of research on Class Size Reduction (CSR) was guided by the following two questions: “How has class size reduction been conceptualized in the literature? What methods and measures have shaped our knowledge?”

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### Key words and search strings used in the search:

Class size OR Optimal Class Size and Effect OR Academic Achievement/Outcomes

### Search databases and websites:

Institute for Education Science Sites: Regional Educational Laboratory Program (REL); What Works Clearinghouse (WWC); Doing What Works (DWW); National Center for Education Statistics (NCES); Institute for Education Sciences (IES); IES Practice Guides

Other Federally Funded Sites: The Assessment and Accountability Comprehensive Center; The National High School Center; The Center on Innovation and Improvement; The Center on Instruction; The National Comprehensive Center for Teacher Quality; National Center for Education Statistics (NCES) Datasets: K – 12; National Assessment of Educational Progress (NAEP); National Assessments of Adult Literacy (NAAL); Early Childhood Longitudinal Study (ECLS); National Household Education Survey (NHES); Career/Technical Education Statistics (CTES); Common Core of Data (CCD); Crime and Safety Data; Education Finance Statistics Center (EFSC/EDFIN); Education Longitudinal Study of 2002 (ELS); National Longitudinal Studies (NLS-72, HS&B, NELS:88); Private School Universe Survey (PSS); School Survey on Crime and Safety (SSOCS); Schools and Staffing Survey (SASS); NAEP Data Explorer (NDE); Data Analysis System (DAS); School District Demographics System (SDDS); Center for Data-Driven Reform in Education (CDDRE)

Additional Data Resources: The Campbell Collaboration; Data Quality Campaign; ERIC; <http://www.google scholar.com>; <http://www.google.com>; general internet search

### **Criteria for inclusion:**

When Reference Desk Researchers review resources, they consider, among other things, four factors:

1. **Date of the publication:** The most current information is included unless in the case of nationally known seminal resources
2. **Source and funder of the report/study/brief/article:** Priority is given to IES, nationally funded, and certain other vetted sources known for strict attention to research protocols;
3. **Methodology:** i.e. Random control trial studies, surveys, self-assessments, literature reviews, policy briefs, etc. Priority for inclusion is given generally to random control trial study findings; however, the reader should note at least the following factors when basing decisions on these resources: Numbers of participants (just a few? Thousands?); Selection (did the participants volunteer in the study, or were they chosen?); Representation (were findings generalized from a homogeneous or a diverse pool of participants? Was the study sample representative of the population as a whole?)
4. **Existing knowledge base:** Although we strive to include vetted resources, there are times when the research base is slim or non-existent. In these cases we have included the best resources we could find, which may include newspaper articles, interviews with content specialists, organization websites, etc.

### **REL Northeast and Islands**

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