



class size matters

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Research brief on Class Size

Context: NYC public schools have the largest class sizes in the state. In the Campaign for Fiscal Equity case, New York's highest court found that the city's children were denied their constitutional right to an adequate education, in large part due to excessive class sizes. According to the DOE's Learning Environment surveys, reducing class size is the top priority of the city's parents. Furthermore, 86% of NYC principals say they cannot provide a quality education because of overly large classes. Yet class sizes have increased for the last four years, and in the early grades are now the largest in 13 years.

Evidence: The research showing smaller classes boost learning and success later in life is voluminous. The Institute of Education Sciences, the research arm of the US Department of Education, cites class size reduction as one of four K-12 reforms that have been proven to work through rigorous evidence.¹ Large-scale randomized experiments reveal that children who are in smaller classes in the early grades get higher test scores, better grades, fewer disciplinary referrals, and are more likely to graduate from high school, go to college and own their homes more than twenty years later.² In addition, smaller classes enhance the development of "non-cognitive" skills not captured by tests, like persistence, motivation and self-esteem, which are also linked to success in school and in life.³

While experiments in class size reduction in the early grades have not been replicated in the middle and upper grades, many controlled studies indicate that students in smaller classes, in both middle and high school, achieve higher test scores, are more engaged, and are less likely to drop out of school than students in large classes. One comprehensive study commissioned by the U.S. Department of Education analyzed the achievement levels of students in 2,561 schools across the country. After controlling for student background, the only objective factor positively correlated with higher performance was smaller classes. Moreover, the

¹ Institute of Education Sciences, "*Identifying and Implementing Educational Practices Supported by Rigorous Evidence: A User Friendly Guide*," Dec. 2003. The other three reforms cited are one-on-one tutoring by qualified tutors for at-risk readers in grades 1-3; life-skills training for junior high students, and instruction for early readers in phonics.

² Jeremy Finn et.al. "The Enduring Effects of Small Classes," *Teachers College Record*, April 2001; Alan B. Krueger, "Experimental Estimates of Education Production Functions," *Quarterly Journal of Economics*, May 1999; Barbara Nye, Larry V. Hedges, and Spyros Konstantopoulos, "The Long-Term Effects of Small Classes: A Five-Year Follow-Up of the Tennessee Class Size Experiment," *Educational Evaluation and Policy Analysis*, Summer 1999; Jeremy D. Finn, "Small Classes in American Schools: Research, Practice, and Politics," *Phi Beta Kappan*, March 2002; Jeremy Finn et.al., "Small Classes in the Early Grades, Academic Achievement, and Graduating From High School," *Journal of Educational Psychology*, May 2005, Alan B. Krueger and Diane Whitmore, "The Effect of Attending a Small Class in the Early Grades on College-Test Taking and Middle School Test Results: Evidence from Project STAR," *Economic Journal*, January 2001; Raj Chetty et. al. "How Does your Kindergarten classroom affect your earnings? Evidence from Project Star," *Quarterly Journal of Economics*, November 2011.

³ Thomas Dee and Martin West, "The Non-Cognitive Returns to Class Size," *Educational Evaluation And Policy Analysis*, March 2011; Philip Babcock and Julian R. Betts, "Reduced-class Distinctions: Effort, Ability and the Education Production Function," *Journal of Urban Economics*, May 2009; J. Heckman and Y. Rubinstein, "The Importance of Noncognitive Skills: Lessons from the GED testing program," *The American Economic Review*, May 2001.

researchers found that student achievement was even more strongly linked to class size in the upper grades than the lower grades.⁴

Class size reduction is also one of the few education reforms that significantly narrow the achievement gap between racial and economic groups.⁵ Four years in a smaller class in the early grades more than doubles the odds that a student living below the poverty line will graduate from high school in time— equaling the graduation rate of their affluent peers. Furthermore, being assigned to a small class narrows the black-white gap in college-test taking by 54 percent.⁶ Some experts have even posited that one of the major factors contributing to the significant narrowing of the achievement gap that occurred nationally in the 1970's and 1980's was the concurrent lowering of class size during this period.⁷

What are the major challenges to policy, programming, and implementation?

Some critics have argued that there is a trade-off between class size and teacher quality. Yet the evidence suggests the opposite: smaller classes are likely to lead to a more effective and experienced teaching force, especially in NYC and other high-needs districts, by lowering the high rate of teacher attrition. Studies in California, New York State and elsewhere have shown lower rates of teacher turnover when class sizes are reduced.⁸

A report prepared for the NYC Department of Education in 2003 based on exit interviews with teachers who left after one year cited excessive class size as one of the top reasons for leaving. In interviews, the subject of excessive class size recurs over and over again.⁹ A survey in 2004 found that among NYC teachers who were considering quitting, class size reduction was one of the top three reforms that would entice them to stay longer.¹⁰ Teachers surveyed nationally respond that the best way to improve their effectiveness is to lower class size.¹¹

⁴ D. McLaughlin and Gili Drori, “***School-Level Correlates of Academic Achievement***,” U.S. Department of Education, May 2000; also Sarah T. Lubienski et.al., “Achievement Differences and School Type: The Role of School Climate, Teacher Certification, and Instruction,” ***American Journal of Education*** 115, November 2008. For more studies that show correlations between smaller classes in the middle and upper grades and improved academic outcomes, see Class Size Matters fact sheet, “The importance of class size in the middle and upper grades,” accessed at <<http://www.classsizematters.org/wp-content/uploads/2011/04/fact-sheet-on-upper-grades.pdf>>.

⁵ Spyros Konstantopoulos and Vicki Chun, “What Are the Long-Term Effects of Small Classes on the Achievement Gap? Evidence from the Lasting Benefits Study,” ***American Journal of Education***, 116, November 2009.

⁶ Alan B. Krueger and Diane M. Whitmore, “The Effect of Attending a Small Class in the Early Grades on College-Test Taking and Middle School Test Results: Evidence from Project STAR,” ***Economic Journal***, vol. 111, January 2001, pp. 1-28.

⁷ See for example, Alan B. Krueger and Diane Whitmore, “Would Smaller Classes Help Close the Black-White Achievement Gap?” ***Bridging the Achievement Gap***, Brookings Institution Press 2002; and Paul E. Barton and Richard A. Coley, “The Black-White Achievement Gap: When Progress Stopped,” ***Policy Information Report***, Educational Testing Service, 2010.

⁸ Lawrence P. Gallagher, “Class Size Reduction and Teacher Migration: 1995–2000,” ***Technical Appendix of the Capstone Report***, Part C, 2002; Emily Pas Isenberg, “***The Effect of Class Size on Teacher Attrition: Evidence From Class Size Reduction Policies in New York State***,” U.S. Bureau of the Census, February 2010.

⁹ Fred Smith, “***Cohort 2001: An Exit Survey of New Teachers Who Left the NYC Public Schools Within One Year***,” prepared for the NYC Department of Education, July 2003.

¹⁰ New York City Council Investigation Division, “***Report on Teacher Attrition and Retention***,” 2004, accessed at <<http://www.nyc.gov/html/records/pdf/govpub/1024teachersal.pdf>>. The other two reasons cited were a higher salary and better discipline, with the latter also shown to be positively affected by class size reduction.

¹¹ Public Agenda, “***A Sense of Calling: Who Teaches and Why***,” December 1999; 86% of teachers said that reducing class size would be a very effective way to improve the quality of instruction, far above any other reform mentioned.

Other critics claim that since the best known large-scale study of class size, the STAR experiment in Tennessee, showed gains for students in classes of 13 to 17 compared to those in classes of 22 to 25, classes would have to be reduced to these levels to produce benefits. Yet many studies have shown that there is no necessary threshold for class-size gains.¹² A re-analysis of the STAR results demonstrates that even for students placed in the “larger” classes of 22 to 25, the smaller the class within that range, the better the outcome.¹³

Still others argue that class size reduction is too expensive. Yet Alan Krueger, former chief economist for the Treasury Department and currently Chairman of the Council on Economic Advisers, has estimated that every dollar invested in smaller classes yields about \$2 in benefits.¹⁴ This estimate does not take into account savings from lower rates of grade retention or special education referrals, both of which are quite costly and would likely fall if class sizes were reduced. Yet another study suggests that smaller classes would produce large medical savings because of improved life prospects, concluding that “Reducing class sizes may be more cost-effective than most public health and medical interventions.”¹⁵

In 2009, the DOE estimated that it would cost \$358.4 million to achieve the class size goals in their C4E plan, to no more than twenty students on average in grades K-3; 23 students in grades 4-8 and 25 in high school.¹⁶ Yet the city spends nearly one billion dollars subsidizing charter schools, and its total education budget is more than \$21 billion, so achieving these goals would cost less than 2 percent of its overall budget.

Best Policy/Practice examples:

In 2012, as in earlier years, the Icahn charter schools outscored all other NYC charters on the state standardized exams in reading and math. These schools cap class size at 18 students in all grades K-8.¹⁷

In California, the Quality Education Act of 2006 provides funding for reducing class sizes to 20 students in grades K-3, and 25 in grades 4-12 in schools with large numbers of low income, minority and English learners. Since then, 85% of these schools have met their goals for improving outcomes.¹⁸

In 2003, Florida voters approved a change in their state constitution requiring a gradual reduction of class size in all grades. This led to a cap of 18 students per class in grades preK-3rd, 22 in 4th-8th grades and 25 in high

¹² Peter Blatchford, P. Bassett, and P. Brown, “Examining the effect of class size on classroom engagement and teacher-pupil interaction: differences in relation to prior pupil attainment and primary vs. secondary schools,” *Learning and Instruction*, December 2011.

¹³ Alan B. Krueger and Diane Whitmore, “Would Smaller Classes Help Close the Black-White Achievement Gap?” *Bridging the Achievement Gap*, Brookings Institution Press 2002.

¹⁴ Alan B. Krueger, “Economic Considerations and Class Size,” *The Economic Journal*, February 2003.

¹⁵ Peter Muennig and Steven H. Woolf, “Health and Economic Benefits of Reducing the Number of Students per Classroom in US Primary Schools,” *American Journal of Public Health*, November 2007.

¹⁶ NYC Department of Education, “**Response to SED C4E Class Size Questions– Submitted on November 23, 2009**,” accessed at <http://www.p12.nysed.gov/mgtserv/C4E/doc/nyc_class_size_reduction_plan/2009_2010/SED_Response_11232009.pdf>.

¹⁷ NYC Charter School Center, “Data Brief: NYC Charter School Performance on the 2011-12 State Exams for Math and English,” July 19, 2012; see also Yoav Gonen, “Kids are Bronx tale of success,” *NY Post*, October 19, 2009.

¹⁸ Courtney L. Malloy and Andrea K. Nee, “Lessons from the Classroom: Initial Success for At-Risk Students. A Report on the Quality Education Investment Act,” *Vital Research, LLC*, November 2010, accessed at <<http://goo.gl/77uJI>>.

school, to be achieved by the 2010-2011 school year.¹⁹ Between 2003 and 2009, the state's students experienced significant gains on the national assessments known as the NAEPs, as well as a narrowing of the achievement gap between white and black students.

The schools run by the United States Department of Defense for the children of the military are consistently among the best performing according to the national assessments called the NAEPs, with the smallest achievement gap in the nation, despite high mobility levels of poverty, with half of the students eligible for free or reduced lunch. Starting in 1999, Department of Defense schools began reducing class size, and required all schools to feature 18 students per class in grades K-3 by 2006.²⁰

Finland is consistently among the developed nations' highest achievers on the international assessments called the PISAs. In 2009, the nation scored 3rd in reading, 6th in math and 2nd in science. Finland also has some of the smallest class sizes among the OECD nations, averaging 21 or less in all grades– and also among the most equitable, with little variation in class size across schools.²¹ According to experts, including the former Finnish Education Secretary, a key reason that the country's schools have outperformed others with similar demographics is their small class size.²²

Bottom Line: Researchers, educators, and parents agree that class sizes should be reduced in NYC schools to improve student outcomes, to provide a more equitable opportunity for children to learn, and to narrow the achievement gap.

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¹⁹ Florida Department of Education, "**Florida's Class Size Reduction Amendment History**," accessed at <<http://www.fldoe.org/classsize/>>.

²⁰ Michael Winerip, "Military Children Stay a Step Ahead of Public School Students," **New York Times**, December 11, 2011. Alicia K. Borlik, "DoDDS Starts Full-Day Kindergarten at Selected Sites," **American Forces Press Service**, April 12, 1999.

²¹ OECD, "**Education at a Glance 2011: OECD Indicators**", September 13, 2011; see Indicator D2, accessed at <<http://www.oecd.org/education/highereducationandadultlearning/48631144.pdf>>.

²² Justin Snider, "An Interview with Henna Virkkunen, Finland's Minister of Education," **The Hechinger Report**, March 16, 2011; Samuel E. Abrams, "The U.S. Could Learn From Finland," **The New Republic**, January 28, 2011.