


MEMORANDUM

April 13, 2015

TO: The Honorable Chair and Members of The School Board of Miami-Dade County, Florida

FROM: Alberto M. Carvalho, Superintendent of Schools 

SUBJECT: TRANSMITTAL OF INFORMATION CAPSULE, CLASS SIZE REDUCTION

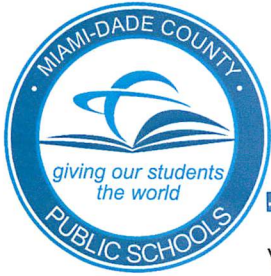
Attached please find a copy of the Information Capsule, *Class Size Reduction*. The Information Capsule summarizes findings from studies on class size reduction (CSR). Studies have found that the achievement gains found in smaller classes do not match the gains created by ensuring the presence of highly qualified teachers. Critics of CSR argue that other educational reforms, such as increased teacher salaries or a focus on quality of instruction, are more cost-effective interventions. Research on the impact of CSR on students' academic achievement has produced mixed results, but a number of studies suggest that it has a more pronounced effect at the early primary grades and for low-income and minority students. Summaries of several research studies, including those conducted in Tennessee, Florida, and internationally, are provided. Finally, policy recommendations that scholars have made based on research findings are reviewed.

If you need further information, please contact Ms. Marie Izquierdo, Chief Academic Officer, Office of Academics and Transformation, at 305 995-1451, or Ms. Gisela Feild, Administrative Director, Assessment, Research, and Data Analysis, at 305 995-2943.

AMC:cb
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Attachment

cc: School Board Attorney
Superintendent's Cabinet
Ms. Deborah Karcher
Ms. Gisela Feild
Dr. Aleksandr Shneyderman



INFORMATION CAPSULE

Research Services

Vol 1407
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Christie Blazer, Supervisor

CLASS SIZE REDUCTION

At a Glance

This Information Capsule summarizes findings from studies on class size reduction (CSR). Studies have found that the achievement gains found in smaller classes do not match the gains created by ensuring the presence of highly qualified teachers. Critics of CSR argue that other educational reforms, such as increased teacher salaries or a focus on quality of instruction, are more cost-effective interventions. Research on the impact of CSR on students' academic achievement has produced mixed results, but a number of studies suggest that it has a more pronounced effect at the early primary grades and for low-income and minority students. Summaries of several research studies, including those conducted in Tennessee, Florida, and internationally, are provided. Finally, policy recommendations that scholars have made based on research findings are reviewed.

Over the past several decades, state-level policies designed to reduce class sizes have become a popular reform strategy in an effort to increase student achievement levels (Hanover Research, 2015). According to The Center for American Progress, 77% of Americans believe that educational funding should be spent on smaller classes rather than increased teacher salaries (Chingos, 2011).

Smaller class sizes are perceived as allowing teachers to spend more time with each student and less time on classroom management, thereby providing better instruction tailored to each student's individual needs and ensuring higher academic achievement (Organisation for Economic Co-operation and Development, 2012).

Class Size Reduction Versus Teacher Quality

Most of the research on CSR that also examined the influence of teacher quality has reported that the achievement gains found in smaller classes do not match the gains created by ensuring the presence of effective teachers.

Although some studies have shown that reductions in class size have a positive impact on student achievement, these impacts have often been offset because many inexperienced teachers had to be hired to staff the new classrooms, reducing average teacher quality (Schanzenbach, 2014; Organisation for Economic Co-operation and Development, 2012). A study of the influence of both CSR and changes to the California teacher workforce found that students in classes with teachers who were new to their classrooms suffered academically from the teachers' inexperience by almost the same amount as they benefited from being enrolled in smaller classes (Jepsen & Rivkin, cited in Chingos & Whitehurst, 2011).

The Council of Chief State School Officers (2012) noted, "In fact, in those instances where CSR efforts have failed to produce significant improvements, it is often because the policy shift failed to account for the recruitment of additional qualified personnel. As a result, the quality of the teaching force was diluted, and any effects that may have been realized by the CSR initiative were erased."

The Organisation for Economic Co-operation and Development (OECD, 2012) noted that reducing class size does not, on its own, lead to increases in student performance. Findings from the OECD's Programme for International Student Assessment (PISA) suggested that states and school districts that prioritized higher teacher quality over smaller classes tended to have higher levels of academic performance. The OECD concluded that raising teacher quality is a more effective way to improve student outcomes.

Cost-Benefit Analysis

CSR is very expensive. Reducing class size by one-third, from 24 to 16 students, requires hiring 50% more teachers. In addition, new facilities may need to be built to accommodate the additional classes (Chingos, 2011).

Because of the current economic climate, many states are reversing earlier decisions and increasing class sizes. A one-student increase in the student-teacher ratio in the U.S. would reduce the nation's teaching workforce by about 7% and would save over \$12 billion per year nationally in salary costs (Chingos & Whitehurst, 2011).

Researchers have stated that when school finances are limited, the cost-benefit test any educational policy must pass is not "Does this policy have any positive effect?" but rather "Is this policy the most productive use of these educational dollars?" (Chingos & Whitehurst, 2011). The costs and benefits of CSR should be carefully weighed against other those of educational interventions when difficult budget decisions must be made. Several studies have found that CSR is not one of the most cost-effective educational interventions (Chingos, 2011; Chingos & Whitehurst, 2011).

Many other critics challenge CSR not because of its impact on student achievement but because they do not believe it is the best use of educational funds. They argue that other policies, such as increased teacher salaries or a focus on quality of instruction, are more cost-effective interventions (Hanover Research, 2015; Watson et al., 2013; Hanover Research, 2012).

Impact of Class Size Reduction on Student Achievement

Findings from studies on class size reduction (CSR) must be viewed with caution for a number of reasons, including:

- A number of research studies have been found to be methodologically flawed so their results are not useful as a guide to policy.
- Studies differ in the setting, method, grade levels, and magnitude of class size variation that are analyzed.
- Schools with different class sizes are often not directly comparable because they differ in many other ways, such as the demographic characteristics of their students and the instructional programs offered.

- The introduction of CSR often coincides with other reforms aimed at increasing student achievement, making it difficult to isolate the effects of CSR from other interventions.
- Some researchers conduct studies on Pupil-Teacher Ratio (PTR) reforms, mislabeled as “class-size” reforms. PTR reductions have been found to have little effect on student achievement. PTR is the number of students in a school compared to the number of teaching professionals. Often all educators are part of the computation, including counselors and administrators (Hanover Research, 2015; Achilles, 2012; Hanover Research, 2012; Chingos & Whitehurst, 2011).

Research on the impact of CSR on students’ academic achievement has produced mixed findings. Some studies have found that CSR has a positive impact on students’ performance, including studies conducted using data from Tennessee’s Student Teacher Achievement Ratio (STAR), the most methodologically sound implementation of CSR conducted to date. Other studies have found that CSR has no impact on student achievement or that its impact varies depending on student characteristics (Schanzenbach, 2014; Watson et al., 2013; Council of Chief State School Officers, 2012; Chingos & Whitehurst, 2011).

In summary, studies have reported the following results:

- CSR is most likely to result in student achievement gains in kindergarten through grade 3.
- Minority and low-income students in elementary grades benefit the most from smaller class sizes.
- For the greatest benefits, students should attend smaller classes for the duration of their K-3 educational experience (Schanzenbach, 2014; Achilles, 2012; Council of Chief State School Officers, 2012; Hanover Research, 2012; Chingos & Whitehurst, 2011).

Examples of Research Studies

Tennessee. One of the most popular and methodologically sound implementations of CSR was the Tennessee Student Teacher Achievement Ratio (STAR), a large-scale, randomized, longitudinal experiment conducted between 1985 and 1989. Beginning in kindergarten, students were randomly assigned to “small” classes (about 15-17 students), “regular” classes (about 22-25 students), or “regular with a full-time aide” classes (about 22-25 students) in 79 schools. Cognitive outcomes were measured by norm-referenced and criterion-referenced tests aligned to state standards. The STAR analyses showed immediate impacts of small classes on student achievement and behavior, including:

- Improved test scores;
- Improved school engagement;
- Reduced grade retention; and
- These benefits were greater for poor, minority, and male students.

The data resulting from the STAR experiment have been analyzed by many researchers over the years. One such analysis found that elementary students randomly assigned to small classes outperformed their classmates who were assigned to regular classes by approximately 0.22 standard deviations after four years. This is equivalent to students in smaller classes having received about 3 months more schooling than students in regular classes.

Continuing analyses of STAR data have also found that attending small classes in the early grades (K-3) had long-term advantages for students. Long-term benefits included:

- More advanced course work in high school;
- Higher high school graduation rates;
- A greater number of students taking college entrance examinations; and
- Students more likely to be enrolled in college at age 20 (Achilles, 2012; Council of Chief State School Officers, 2012; Chingos, 2011; Chingos & Whitehurst, 2011).

Florida. In 2002, Florida voters approved an amendment to the Florida state constitution that set limits on the number of students in core classes (such as English, mathematics, and science) in the state's public schools. Beginning with the 2010-2011 school year, the maximum number of students in each core class was required to be 18 students through grade 3; 22 students in grades 4-8; and 25 students in grades 9-12. In 2003, the Florida Legislature enacted a law that implemented the amendment by first requiring districts to reduce their average class sizes to the maximum for each grade grouping by at least two students per year. Beginning in 2006-2007, compliance was measured at the school level (average class size within the school) and beginning in 2010-2011, compliance was measured at the classroom level (Chingos & Whitehurst, 2011).

Researchers found that Florida's CSR did not have an impact on students' standardized test scores in grades 3 through 8 between 2004 and 2009. In addition, CSR was not found to have a significant effect on students' non-cognitive outcomes, such as absenteeism, suspensions, and disciplinary infractions. Studies did not measure the impact of CSR at kindergarten or grades 1-2. It has been hypothesized that analysis of data at these lower grade levels might have produced more positive findings (Schanzenbach, 2014; Hanover Research, 2012; Chingos & Whitehurst, 2011).

Florida's policy cost approximately \$20 billion to implement during its first eight years, with continuing costs estimated at \$4 billion to \$5 billion for each subsequent year (Chingos & Whitehurst, 2011).

International Comparisons

According to 2012 data released by the Organisation for Economic Co-operation and Development (OECD, 2014), average class size in public school primary education was 22 in the United States, 19 in Finland, and 26 in the United Kingdom. In Japan and Korea, average class size was 28 and 25, respectively. In China, average primary education class size was 38. A listing of average class sizes for all OECD countries, by type of institution and level of education, is available at [http://www.oecd.org/edu/EAG2014-Indicator D2 \(eng\).pdf](http://www.oecd.org/edu/EAG2014-Indicator D2 (eng).pdf).

The Organisation for Economic Co-operation and Development (2010) reported that while class size reductions have been found to be modestly effective in improving student performance in its member countries, they are less effective than other interventions, such as increasing teacher compensation, making extracurricular classes available, or raising the average expenditure rate per student.

A study conducted using data from Swedish upper primary schools found that teachers in larger classes seemed to shift toward whole-class instruction and transfer more responsibility to

students for their own learning (Fredriksson et al., 2014).

A study on the effect of class size on student performance in 11 countries found sizable beneficial effects of smaller classes in only two countries (Greece and Iceland). Noteworthy class-size effects were observed only in countries with relatively low teacher salaries (Wößmann & West, 2006).

Policy Recommendations

Based on the findings of research studies, scholars have made the following policy recommendations:

- When budgets are limited, CSR efforts may be prioritized for the populations that have been shown to realize the greatest benefits – early grade levels and low-income and minority students.
- Across-the-board reductions in class size are likely to yield disappointing results. Chingos (2011) suggested that individual schools be given the flexibility to use small classes as a response to specific circumstances. For example, a principal may decide that a smaller class is appropriate for an inexperienced teacher who needs to develop classroom management skills and assign a larger class to a highly effective veteran teacher.
- Any changes in class size policies should be accompanied by steps to maintain or improve teacher quality.
- CSR efforts require a careful consideration of costs, such as the increased number of teachers who will be required and the availability of adequate classroom space.
- Educators should weigh the costs and benefits of CSR to determine if it is the most cost-effective educational intervention or if other less expensive reforms will lead to comparable increases in student achievement (Schanzenbach, 2014; Achilles, 2012; Council of Chief State School Officers, 2012; Hanover Research, 2012; Chingos & Whitehurst, 2011).

Conclusion

An *Education Week* review of the research on CSR concluded that “shrinking the number of students in a class does not automatically translate into better learning” (Freedberg, 2012). CSR efforts do not succeed unless school districts ensure that classes are staffed with effective teachers. Since CSR is expensive, states and districts are advised to weigh its costs and benefits against those of other educational interventions. Research on the impact of CSR on students’ academic achievement has produced mixed results, but a number of studies suggest that it has a more pronounced effect at the early primary grades and for low-income and minority students.

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