

Class Size Reduction: A Significant Option for Improving Student Learning

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Abstract: Raising academic standards is a driving force behind public school initiatives. True educational reform requires a data-driven approach to choosing valid options for student improvement. We discuss current and continuing research that provides evidence that class size reduction, with related variables, is a significant option for improving student learning.

In the last few years, significant attention has been given to raising academic standards and the quality of our nation's educational system. Among a variety of strategies proposed is the campaign for class-size reduction. The goal of this federal initiative, the Class Size Reduction Program (as authorized under PL 106-554), is to help schools improve student achievement by reducing class size through the hiring of fully qualified teachers to ensure that class size – particularly in the early grades – is decreased to no more than 18 children per class. The purpose of this paper is to discuss current and continuing research that provides evidence that class size reduction can improve student learning.

Methods

A review of the literature was used to collect data for this manuscript. The data were extrapolated from on-line press releases, professional and academic journals, as well as pertinent web sites and newspaper articles significant to class size reduction. Once these data were collected, they were placed in categories for analysis. Each article was read, re-read and analyzed in order to create common themes and categories on class size reduction issues. The analysis was conducted by reading and re-reading the data, and cross-checking to keep track of common themes and patterns that emerged. The following conceptual organizers occurred as a direct result from the literature search: (a) adequate funding, (b) high quality teachers, (c) effects on reading and mathematics, (d) effects on general students' achievement.

Theoretical Perspective

According to the Association of Supervision and Curriculum Development (2003) and the National Education Association (1999), at least four conceptual organizers frame the issue of class size reduction. A primary issue of effective class size reduction is adequate funding. Secondly, many proponents and opponents on the national and international stage feel there must be an adequate number of qualified teachers. A third concern is whether it is essential to apply the reduction in certain subject areas only, such as reading and mathematics. The last concern has to do with whether merely reducing class size will assure improvements in student achievement.

Adequate Funding of Class Size Reduction

Funding is considered to be the overall determining factor that outweighs the influence of other options; however, few policy reports have sufficiently identified the specific area or areas of funding that make a difference (NEA, 1999). Is funding of facilities more important than funding for materials and ancillary equipment needs? Is funding for teacher salary increases able to ensure student success? Or, is funding teachers' professional development and training, in conjunction with class-size reduction, essential to the improvement of student standardized performance?

The state of Tennessee initiated its class size reduction project titled Student/Teacher Achievement Ratio (STAR). This longitudinal study has been considered the most premier experimental research effort addressing the issue and cost the state approximately \$12 million dollars. The major results of the study were: (a) kindergarteners showed definite advantage for small class in achievement but no significant advantage for the use of a teacher aide; (b) first grade small classes outperformed students in regular classes on standardized tests; (c) second grade small classes had significant advantages in the SAT Reading, Math, Listening, and Word Skills; and (d) third grade small classes repeated the pattern regardless of attending classes in an urban, rural, inner city or suburban setting. In Florida, of the 840 million dollars allocated to the state for education, 464 million dollars have been estimated to lower class sizes.

Although there is little agreement as to the best way to reduce class size, there is little argument that it is a costly endeavor. The funding essential to achieving the target outcome of higher student achievement will drive its overall implementation and eventual success. The reality of limited resources has been dealt with in the state of California during their initiation of the class size reduction initiative. Due to the success of STAR, California's class-size initiative was begun in 1996 when California had a \$12 billion budget surplus. Research on this program reflected an increase in students' SAT-9 scores every year CSR was implemented, and the average score of each succeeding cohort was higher than that of the previous. Although many variables were considered as difficult to control for, they concluded many gains were nevertheless attributed to CSR. Over \$1.5 billion dollars was spent in 2000-2001 for their effort.

A recent article by Gilman and Kiger (2003) assessed the background of a variety of class-size reduction initiatives in several states around the country and concluded that further research on how to reduce the economic impact but retain the benefits of class-size reduction is essential. For example, Indiana implemented its first K-3 class-size reduction initiative (Prime Time) during the 1984-1985 school year. Although financial limitations made it difficult to continue the program beyond three years, teachers were fairly satisfied with smaller classes and felt significant gains had been realized.

Adequate Number of Qualified Teachers

According to the literature (Education Week, 2001), a shortage of qualified teachers and adequate spacing in some states (i.e., California) have led to class size reduction becoming a failure. In response, the United States Congress provided funding from 1999 through 2002 to recruit, hire and train qualified teachers (Education Week, 2003; National PTA, 2003). The intention of this initiative was to ensure that every child received personal attention, had a solid foundation for learning and learned to read by the end of third grade. They believe that improving teacher quality and reducing class size are essential elements of effective school reform.

Project STAR's results were also supported by similar findings in other states, such as Wisconsin, where a Student Achievement Guarantee in Education (SAGE) Program was initiated (NEA, 2003). SAGE was also found to have helped lessen the achievement gap between White and African-American students. Wisconsin's SAGE program not only targeted a class size of 15, but included the offer of extended services via "community schools," a rigorous academic program, professional development to enhance teacher quality, and accountability measures (Wagner, 2001).

Effects of Class Size Reduction on Reading and Most Subjects Areas

Test results in the Walnut Creek School District in California showed significant improvement in student reading achievement as a result of ongoing student assessment and

instruction modification in smaller classes. Data from the same school district for students above grade four reflected flat test scores on the same standardized assessments (Impact CSR, 2003). This difference has implications for decision-makers considering reducing class size at the middle or secondary levels.

An international perspective on class-size reduction has also offered pros and cons to the issue. Whereas the results of a pilot project, initiated in 2000, in secondary schools in Edmonton, British Columbia demonstrated positive impressions, the findings from research conducted in Australia, Flemish Belgium and France suggest minimal effect in most subject areas (Wagner, 2001). Wagner's research further revealed that class size reduction was minimally significant for improving math performance of students in Canada, Germany, Iceland, South Korea, and Singapore.

Class Size Reduction and Student Achievement

A policy paper on class size reduction and student achievement drafted by the Public Policy Institute of California (2002) stated the benefits of CSR, in terms of higher student achievement, have proven more difficult to validly identify. This is due to problems in separating achievement from other intervening variables, such as teacher salaries, expanded and improved preschool, greater use of technology, or other instructional programs. Nevertheless, there is evidence that, controlling for changes in teacher quality (i.e., fully qualified as opposed to partially certified), smaller classes raised student achievement (more direct instruction/one-on-one) and the effects were larger in schools serving predominantly lower-income students (i.e., more effective instructional strategies, students are more alert and focused).

Lessons Learned

Results of the research of previous and existing programs have also presented some supplementary data that suggests a cautionary approach to reducing class size (ASCD, 2003). This data are referred to as lessons learned which might minimize errors in the implementation of future initiatives such as those recently voted for and passed in 2002 in many states, including the state of Florida.

Under the constitutional amendment, school districts in the State of Florida are required to reduce class size by two students each year until 2010 (*Miami Herald*, 2003). Class size targets for kindergarten through third, fourth through eighth, and secondary, are 18, 22, and 25, respectively. Although the governor of Florida is willing to dedicate \$628 million in the 2004 budget for smaller classes, he warned that responding to the new law will not be achieved without the possible expansion of private school vouchers, lifting restrictions on the number of charter schools, or redrawing attendance zones.

California's effort has been criticized and labeled as a near-textbook case of how not to reduce class size. For example, California did not institute a trial program to explore class-size reduction options. They also failed to provide adequate funding to pay for the initiative or define "small classes" within the same construct of other states. Programs to reduce class size require careful planning and sufficient consideration of existing strengths and weaknesses of a particular school system (Biddle & Berliner, 2002).

Conclusions and Implications for Policy

One could venture to say that a mere reduction in students would not assure the desired academic achievement expected if certain and appropriate resources do not follow. Effective application of any policy for class size reduction must factor in certain considerations. The expertise, professional background and quality of teachers have to be factored in although, due

to a critical shortage of teachers, the number of qualified teachers may be difficult to obtain. Another important consideration would be the need for supplemental resources, such as technological equipment and other educational materials.

The ability to control for many potential intervening variables also complicates the issue. It would seem appropriate that policymakers include in their discussions variables of ethnicity, income levels, amount of time allotted per school subject, and teaching strategies. Sufficient and efficient evaluation of the class size reduction data must also be well thought out. Due to funding limitations (e.g., Indiana's proposed 17-year longitudinal study of Prime Time was cancelled), more collaborative efforts among stakeholders must be considered.

Finally, as policy makers demand greater student achievement and school accountability, it would be advisable to consider funds for schools to enrich an entire school population and not benefit only a few. A better approach to class size reduction might include reducing class sizes in a subset of schools each year, starting with low performing schools serving high poverty populations. This may limit the early departure of teachers. Many teachers leave the profession within the first five years, and students with special needs seem to suffer the most no matter what alternative is chosen. Believing and hoping for a successful conclusion may be within reach. It is crucial that all constituents become more involved in discussions about issues such as class size reduction. Our students deserve nothing less.

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