

# Class Size: Project SAGE

## A Summary of:

**“1999-2000 Results of the Student Achievement Guarantee in Education (SAGE) Program Evaluation”** (December 2000) Center for Education Research, Analysis, and Innovation, University of Wisconsin—Milwaukee. By Alex Molnar, Philip Smith, John Zahorik, *et al.*

**“1998-99 Evaluation Results of the Student Achievement Guarantee in Education (SAGE) Program”** (December 1999) Center for Education Research, Analysis, and Innovation, University of Wisconsin—Milwaukee. By Alex Molnar, Philip Smith, John Zahorik, *et al.*

**“Evaluating the SAGE Program: A Pilot Program in Targeted Pupil-Teacher Reduction in Wisconsin”** *Education and Policy Analysis* (Summer 1999): 165-177. By Alex Molnar, Philip Smith, John Zahorik, *et al.*

### Focus

- Early Childhood
- ✓ Primary School
- Middle School
- Secondary School
- Postsecondary
- Extended Learning

## Overview

Enacted by state law in 1995, Wisconsin’s Student Achievement Guarantee in Education (SAGE) program began as a five-year pilot program in the 1996-97 school year to test the hypothesis that smaller classes in elementary schools raise the academic achievement of disadvantaged students. SAGE includes four reform initiatives: (1) reduction of the pupil-teacher ratio in classrooms to 15:1; (2) establishment of “lighted schoolhouses” that are open longer than the traditional school day; (3) development of rigorous curricula; and (4) refinement of staff development and professional accountability systems to support the class size reduction program. During the first year of SAGE, schools focused on implementing the class size reduction initiative. To achieve the desired pupil-teacher ratio, SAGE schools used regular classrooms (15 students and 1 teacher); shared space classrooms (classrooms divided by a temporary wall with 15:1 classes on either side); two-teacher teams (30 students with 2 teachers); and floating teachers (who joined 30-student classrooms for core classes). Two other strategies

## POPULATION

More than 3000 kindergarten and first grade students attended SAGE schools in the first two years of the program. Evaluators compared the scores of these students with scores of more than 1600 students in comparable district schools with similar socioeconomic demographics. SAGE classrooms have a student-teacher ratio of 12-15 students to 1 teacher and comparison classes have 21-25:1. SAGE includes 30 schools from 21 Wisconsin districts. Seven of the schools are in Milwaukee. In the school year 1999-00, 46.9% of SAGE students were white, 25.3% African American, 10.4% Native American, 7.8% Latino, 5.2% Asian, 1.6% other (0.3% unavailable). Of these students, 63.4% received free or reduced price lunch.

were used in rare instances: split day classes (15 students and 2 teachers, one in the morning and the other in the afternoon) and three-teacher classes (45 students in one large room with three teachers). SAGE schools received \$2000 per low income student to implement these class size reduction strategies.

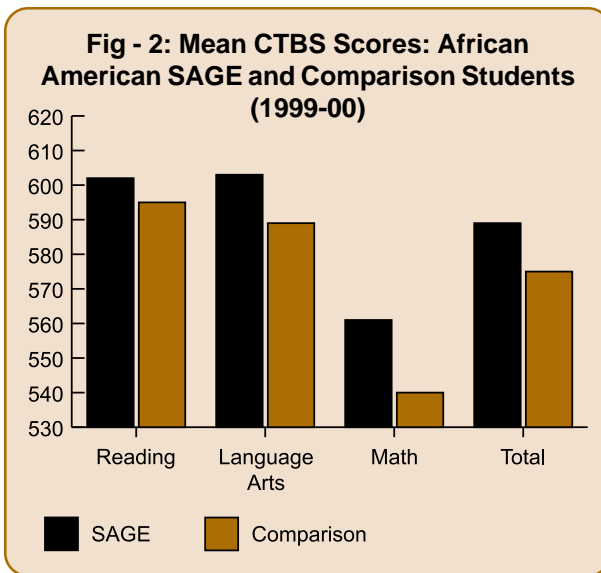
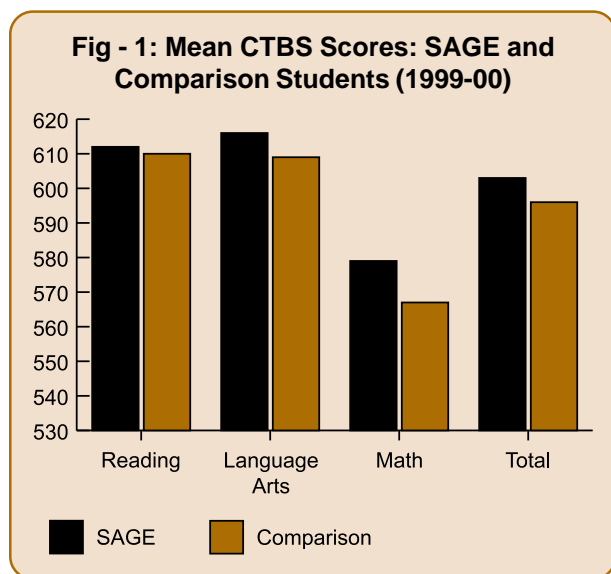
### Key Findings

SAGE and comparison school students began first grade with similar reading, language arts and math scores on pre-tests, but by the second and third grades, SAGE students outscored their peers in comparison schools on every test administered by the evaluators. The gap was statistically significant in every subject except reading. The mean scores on the Comprehensive Test for Basic Skills for second graders in SAGE and comparison schools are reported in Figure 1.

To indicate the significance of these mean score differences and adjust for variables such as family income, attendance and race, evaluators determined an adjusted effect size for the impact of small classes in each of the testing categories: Reading (.157), Language Arts (.230), Mathematics (.427) and total score (.315).<sup>1</sup>

Though they started first grade with the same academic profiles, African American students made greater gains in the small SAGE classes than African Americans in larger classes. Figure 2 shows CTBS scores for African American SAGE and Comparison students in the second grade.

The SAGE initiative reduced the gap between white and African American student achievement, with the strongest effect observed during the first



grade year. By contrast, the achievement gap increased over time in comparison schools.

For the second grade cohort between 1998 and 2000:

- ◆ SAGE pretest achievement gap (22 points); second grade gap (21 points).
- ◆ Comparison pretest achievement gap (26 points); second grade gap (30 points).

For the third grade cohort between 1997 and 2000:

- ◆ SAGE pretest achievement gap (29 points); third grade gap (23 points).
- ◆ Comparison pretest achievement gap (15 points); third grade gap (28 points).

The differences in achievement outcomes, related to the type of classroom reduction strategy used, were not statistically significant. In other words, regular small classes, team-teacher classes, shared space and floating teacher classes had similar, positive benefits for student achievement.

According to evaluators, the rigorous curriculum, lighted schoolhouse and staff development components of the SAGE reform model were not

uniformly or immediately implemented across the schools, so that they had little impact on achievement in SAGE classroom performance in the first few years. As these initiatives were fully implemented, they positively influenced class size findings.

<sup>1</sup>. In terms of effect size, a positive figure less than 0.25 is a modest effect; 0.25 to 0.5 is a moderate effect; a figure of 0.5 or above is a large effect.

## Program Components

SAGE used the following strategies to reduce class size, given the constraints of existing facilities and personnel in participating elementary schools:

- ◆ Small Classroom: student-teacher ratio of 15:1 in one room.
- ◆ Two-Teacher Teams: student-teacher ratio of 30:2 in one room.
- ◆ Three-Teacher Teams: student-teacher ratio of 45:3 in one large room.
- ◆ Shared Space Classroom: one large room with a temporary divider and two classes with 15:1 student teacher ratios on either side.

- ◆ Floating Teacher: a roving teacher joins 30:1 classrooms for core classes each day.
- ◆ Split Day: 2 teachers with 15 students, each instructs for half of the day.

According to a survey of 150 first- and second-grade teachers in SAGE schools, the smaller class sizes allowed for new teaching strategies, including:

- ◆ individualized instruction
- ◆ classroom discussion
- ◆ hands-on activities
- ◆ more content coverage
- ◆ less time dealing with disciplinary problems

## Contributing Factors

### *Reduced Class Size*

According to the evaluators, the most significant factor affecting individual student performance on tests was socioeconomic status (SES), but when this variable was accounted for, class size had the most significant effect on student scores. All of the class size reduction strategies used by SAGE had similar, positive effects.

### *Individualized Attention*

According to SAGE teachers, the most significant factor in improving the learning environment and student achievement in smaller classes was the individualized instruction and attention that these classes allow. In small classes, the teachers understood the strengths and weaknesses of each student and tailored their instructional strategies to these students' unique needs.

### *Classroom Management*

The majority of the teachers in small classes reported fewer discipline problems. Through classroom observation and student achievement data, the evaluators found that the more effective teachers used a consistent, decisive and assertive management style to enhance the disciplinary benefits of small class size.

### *Innovative Instructional Strategies*

Because they have fewer discipline problems, small classes allow for student-directed lessons and creative problem-solving assignments, but evaluators warned that these innovative instructional strategies must be grounded in drills that instill an understanding of basics and fundamentals.

**STUDY METHODOLOGY**

SAGE legislation mandated annual evaluation of the program's effects. The evaluation used a quasi-experimental, comparative change design. The evaluators chose this method because they could not randomly assign students and teachers to classrooms or keep classroom cohorts intact from year to year. The lack of incentives for participating in the comparison group made it impossible for the evaluators to use matched-pair comparison schools. But scores from the Comprehensive Test of Basic Skills for both SAGE students and non-SAGE students allowed evaluators to determine the influence of class size on academic achievement. Evaluators collected classroom organization profiles and teacher questionnaires as well as conducted site visits to SAGE classes and interviews with SAGE teachers. The evaluators gave both SAGE and non-SAGE schools the option of not testing students who had special needs or who spoke English as a second language.

**EVALUATION & PROGRAM FUNDING**

SAGE and the SAGE evaluations are funded by the state of Wisconsin. The state has provided \$37 million to bring the SAGE program to approximately 400 new schools in the 2000-01 school year and an allocation of \$3 million to

reimburse school districts for 20% of the construction costs for new classroom facilities.

**GEOGRAPHIC AREAS**

SAGE has now been implemented in 46 school districts throughout the state of Wisconsin. Legislation is pending to bring this pilot program to scale in all of the state's school districts.

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