



**EPSL** | Education Policy Studies Laboratory

**2000-2001 EVALUATION RESULTS OF  
THE STUDENT ACHIEVEMENT GUARANTEE  
IN EDUCATION (SAGE) PROGRAM**

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## INTRODUCTION

### SAGE Program

The Student Achievement Guarantee in Education (SAGE) evaluation is being conducted under contract with the Department of Public Instruction by the School of Education at the University of Wisconsin–Milwaukee. The purpose of the SAGE evaluation is to determine the effectiveness of the Student Achievement Guarantee in Education (SAGE) program in promoting academic achievement of students in kindergarten through third-grade classrooms in schools serving low-income children.

The 1995 SAGE statute [s. 118.43] required participating schools to (1) reduce class size to 15 in kindergarten and grade one in 1996–97, grades kindergarten through two in 1997–98, and grades kindergarten through three in 1998–99 to 2000–2001; (2) stay open from early in the morning to late in the day and collaborate with community organizations to provide educational, recreational, community, and social services (i.e., the "lighted schoolhouse"); (3) provide a rigorous academic curriculum to improve academic achievement; and (4) establish staff development and accountability mechanisms.

The SAGE evaluation involves the 30 schools in 21 school districts that launched the SAGE program in 1996-97 in kindergarten and first grade. Second grade was added in 1997-98, and third grade in 1998-99. The SAGE evaluation compares SAGE schools to a group of 14-17 non-SAGE Comparison schools located in SAGE districts. The results of the 1996-97, 1997-98, 1998-99, and 1999-00 evaluations are generally consistent with Tennessee's Student Teacher Achievement Ratio (STAR) Project (1985-1989), the largest and best-controlled study on class size reduction to this point. It is worth noting two significant design differences in the Tennessee and SAGE studies. First, the Tennessee STAR Project used a true experimental design. The SAGE project uses a quasi-experimental design. The SAGE project evaluation uses naturally occurring classrooms while STAR employed random assignment of students to classroom types which were held constant for the duration of the study. Second, the SAGE evaluation uses a control or comparison group for the purpose of assessing the impact of SAGE interventions.

### Goals of SAGE Evaluation

The SAGE evaluation is intended to determine the impact that the four interventions of the SAGE program have on student achievement. To ascertain and to explain this impact, the evaluation addresses the following questions:

#### SAGE vs. Comparison School – Achievement Outcome Questions

1. What are the achievement levels of SAGE classrooms compared to achievement levels of classrooms in selected Comparison schools?
2. Does participation in a SAGE classroom have a differential impact on the achievement of minority students and white students?
3. Does the impact on achievement of participation in a SAGE classroom change from year to year as students progress from first through third grade?
4. Is the socioeconomic status (as measured by participation in the school lunch program) of SAGE participants related to individual achievement gains in first through third grade?
5. Do different types of SAGE classrooms (e.g. one teacher with 15 students vs. two teachers with 30 students) have different impacts on student achievement?

#### SAGE Schools – Classroom and School Questions

1. What are the instructional characteristics of SAGE classrooms?
2. How are SAGE classrooms organized?
3. Does the degree of congruence between SAGE classroom curricula and national professional curriculum standards in reading/language arts and mathematics correlate with the achievement levels in SAGE classrooms?
4. Does participation in the SAGE program result in an increase in the number or change in the type of school and/or community activities housed in the school before and after school hours?
5. What is the structure and focus of professional development activities in SAGE schools?

6. Does the number of years of teaching experience of SAGE teachers correlate with student achievement?

### **Class Size Research Background**

The principal SAGE intervention is a reduction in class size to 15:1 in kindergarten through third-grade classrooms. Class size reduction in the early elementary grades has become an increasingly popular issue for policymakers and researchers in recent years (Grissmer, 1999; U. S. Department of Education and the Laboratory for Student Success, 1999). Class size reduction has been credited with more learning opportunities for students, increased opportunities for teachers to meet children's individual needs, and less time spent on discipline problems. Parents and teachers like the idea and policymakers are embracing it. Several states, among them California, Florida, Indiana, Nevada, Tennessee, and Wisconsin, have launched class size reduction efforts (Egelson, Harman, & Achilles, 1996; U.S. Department of Education, 2000; Viadero, 1998).

In the last 20 years, several experimental studies and analyses of existing data have been undertaken to examine the relationship between class size and student achievement. Many questions about the effects of smaller classes have remained unanswered. However, an overall pattern of research findings points to beneficial effects of reduced size classes on student learning and effective teaching. In general, though, reductions of just a few students per class do not seem to significantly raise academic achievement (Glass and Smith, 1978; Krueger, 2000; Pate-Bain, Achilles, Boyd-Zaharias, & McKenna, 1992).

A statewide experiment in Tennessee, the largest and best-controlled study on class size reduction to this point has added considerably to the research evidence concerning class size reduction in the United States in the early primary grades. In this study, kindergarten students were assigned on a random basis to classes of 15, 25 with a teacher and an aide, or 25 with a teacher. The same configurations were maintained through third grade. Tennessee's Project STAR (Student/Teacher Achievement Ratio) analyzed student achievement in relation to class size over a four-year period (1985-1989). The project included 17 inner-city, 16 suburban, 8 urban, and 39 rural schools. Findings showed that students in the smaller classes scored higher on the Stanford Achievement Test and on the Basic Skills First (BSF) Test in all four years (K-3) and in all locations. The greatest gains on the Stanford Test were made by inner-city small classes. While all students in small classes benefited, disadvantaged minority students seemed to benefit more from smaller class sizes than their peers (Pate-Bain, Achilles, Boyd-Zaharias, & McKenna, 1992). A further analysis of the use of teacher aides to reduce class size indicates that none of the differences in aide/regular classes achievement data was statistically significant, nor did teachers report advantages with regard to student behavior or reduction of teaching burdens (Finn, Gerber, Farber, & Achilles, 2000).

Studies such as STAR and SAGE can provide crucial information for policymakers. For example, a review of the research literature conducted by Bingham (1993) on white-minority achievement gap reduction and small class size, which included the STAR Project, suggests that small class sizes in the early grades represent an effective strategy to reduce the achievement gap. Bingham proposes that class size reduction may offer an early intervention strategy that serves to prevent rather than to reduce the achievement gap between white and minority students. Further support for small classes in lower elementary grades is produced by the Lasting Benefits Study (LBS). The LBS tracked students who participated in Project STAR in order to determine whether achievement advantages of students from small classes were maintained after students returned to regular-sized classes in fourth grade. Data from 1990-1994 indicate that students who were originally in smaller classes continued to perform better than their peers from classes of 25 with or without a teacher's aide (Mosteller, 1995). Moreover, results from follow-up studies that have indicated that middle school students who attended STAR small classes were from 4 to 8 months ahead when compared to peers without the small class benefit in early elementary grades. Attendance in STAR small classes also appears to have beneficial effects on minority students' college entrance exams and college test-taking results (Boyd-Zaharias & Pate-Bain, 2000).

Class-size reduction (CSR) initiatives have been met with skepticism and the challenges associated with implementation have been acknowledged. Skeptics say that it is one of the most expensive reforms in education and question whether the benefits are worth the cost. Overall achievement gains are minimal, they argue, and the investment required for producing the desired results

of class-size reductions could be better spent elsewhere in education (Hanushek, 1999). CSR policies compete with other educational reform measures, require a considerable commitment of funds, and their implementation can have a significant impact on the availability of qualified teachers (Hruz, 1998, 2000). Bohrnstedt, Wiley, and Stecher (2000) point out the "lessons learned" from the large-scale California class size reduction. They emphasize that before implementing a class-size reduction reform on a large scale, a sufficient number of qualified teachers and new classrooms must be available.

Disagreements about the extent of benefits derived from CSR efforts are often grounded in mistaking CSR with ratios that compare number of students to number of adults working with students in a school. Hanushek's calculations, as other researchers have noted, were based, in many instances, on the ratio of students to staff and often included librarians and special education teachers who do not contribute to the actual reduction of number of students in a classroom (Viadero, 1998). Moreover, Krueger (2000), in a re-analysis of small class size findings, points out that Hanushek used estimates and a disproportionate weighting scheme which helped lead to findings of minimal positive effects of class size interventions. As Krueger indicates, Hanushek's approach to selection of estimates resulted in "the oversampling from studies with lower performance" (p. 19). Further, many of Hanushek's estimates were taken from studies not initially designed to study the effects of class size *per se* but some other component of education. Moreover, Hanushek's analyses of the relationship between the amount of money spent and student achievement outcome did not include the STAR Study.

Indeed, questions of class size and student performance involve the study of how resources can be most effectively allocated to produce desired outcomes. In education, as in other areas of society, the relationship between schooling inputs and schooling outputs is of interest. Wenglinsky (1997) studied the relationship between spending and student achievement by analyzing data from three separate sources: The National Assessment of Educational Progress, the Common Core of Data, and the Teacher's Cost Index of the National Center for Education Statistics. Wenglinsky's research suggests that increased spending to reduce class size has a direct positive effect on mathematics achievement for fourth grade students. However, the cost-effectiveness of CSR measures needs to be examined in terms other than student achievement outcomes to include areas such as student behavior, parental engagement, teacher retention (Bohrnstedt, Wiley, & Stecher, 2000) and reduction of placement in special education classes (Smith & Kritek, 1999).

Class size effects are better understood if we can discern the classroom practices that are most effective in maximizing the benefits of reduced class sizes. Smith and Kritek (1999) found that some classrooms benefit more than others from CSR. Smith and Kritek examined score gains in SAGE and Comparison School first-grade classrooms for 1997-98. Their analysis reveals that on average small classes tend to produce greater gains, but not all small classes produce expected gains. The findings suggest that smaller classes can set the stage for increased academic achievement but do not guarantee it. A study utilizing STAR data addresses this need for further examination of the mediating factors between class size and student outcomes. In an effort to identify quality teaching in the STAR Program, Boyd-Zaharias and Pate-Bain (2000) examined the teaching behaviors of the top 15% of first-grade teachers. Observers rated teachers on 12 teaching practices and conducted interviews. To gain further insight, procedures for the analysis of first-grade teachers were modified to study a select group of high-performing second- and third-grade classrooms (top 10% of gain scores) and a group of low-performing second- and third-grade classrooms (bottom 50%). Comparisons showed that classroom practices differed between the two groups. Boyd-Zaharias and Pate-Bain note that in contrast to teachers in low-performing classrooms, teachers in high-performing classrooms "used class time for learning, they had smooth and efficient classroom routines, and their standards for classroom behavior were explicit" (p.90). Teachers in high-performing classrooms also fostered family involvement and, through "verbal praise, pats and hugs, listening, eye contact, and positive notes" (p.90), nurtured caring personal interactions with their students.

Grissmer (1999) advises researchers to address fundamental questions about the nature of evidence in small class size studies. For policy decisions, he notes that "the seeming transparency of experimental data to policymakers should not be the deciding factor in their policy judgments" (p. 93). Grissmer, from an analysis of small class size research, concludes that a key contribution of experimental data can be their guiding role in non-experimental studies to develop a theory of classroom teacher and student behavior that explains higher student achievement. He further observes that having both experimental and non-experimental evidence is rare in the educational research community, something the SAGE evaluation project has been able to achieve. The design of the SAGE evaluation project utilizes

data from student tests as well as processes in SAGE classrooms. Analyzing processes inside small classes with regard to teacher and student behavior has been a crucial part of the SAGE evaluation project and that analysis is reported in the evaluation results along with student achievement data.

In Wisconsin, the SAGE evaluation team, over the last two years of the five-year evaluation project, has used student achievement data to select high-performing and low-performing SAGE classrooms for further study of classroom practices. Findings from case studies of these classrooms have led to the development of descriptive models of more effective and less effective teaching practices in reduced size classes.

## **Overview of Findings from Previous Years (1996-97, 1997-98, 1998-99, and 1999-00)**

### Achievement Outcome Findings 1996-00

To measure academic achievement, first-grade students in SAGE schools and in a group of Comparison schools were tested in October 1996, and again in May 1997, using the Comprehensive Test of Basic Skills (CTBS) Complete Battery, Terra Nova edition, Level 10. After one year, students in SAGE first-grade classrooms scored higher on CTBS tests than first-grade students in Comparison schools. As a group, SAGE students scored significantly higher on the post-test in reading, language arts, and mathematics sub-tests of the CTBS. The total score of SAGE students was also significantly higher than the total score of comparison group students. The achievement advantage associated with participation in the SAGE program was revealed both in the analysis of individual student scores and in the analysis of averaged classroom scores.

At the individual level of analysis, after controlling for pre-test scores, socioeconomic status (SES) as defined by eligibility for subsidized lunch, absenteeism, and race and ethnicity, SAGE first-grade students scored higher than Comparison school first-grade students on the CTBS post-test in reading, language arts, mathematics and total score. The results were statistically significant for all but the reading scores. At the classroom level, the post-test performance of SAGE first-grade students was 4 scale score points higher in language arts, 4.3 scale score points higher in reading, 4.6 scale score points higher in mathematics, and 4.6 scale score points higher in the total test score than Comparison school students. Each of these findings was statistically significant.

After adjusting for individual pre-test results, socioeconomic status (SES) as defined by eligibility for subsidized lunch, and student attendance, participation in SAGE shows a statistically significant advantage of 6.4 scale score points in the total score and 8.1 scale score points on the mathematics sub-test.

The classroom level data on the averaged performance of first-grade students in 1996-97 and 1997-98 SAGE classrooms suggested that the lower student-teacher ratio in SAGE classrooms mitigated the negative achievement consequences of poverty. SAGE classrooms achieved at a higher level than Comparison school classrooms despite the fact that, as a group, SAGE classrooms enrolled more students who were eligible for subsidized lunch. Furthermore, after adjusting for individual pre-test results and SES as defined by lunch status and student attendance, the post-test scale score advantage increased to 9.8 for SAGE first-grade classrooms. The advantage was 7.1 on the reading sub-test, 9.0 on the language arts sub-test, and 12.3 on the mathematics sub-test. These results were all statistically significant.

Second-grade classrooms were included in 1997-98, and test results were similar to those found for 1996-97 first graders. The 1997-98 results suggest that the positive effects of the SAGE program are maintained, but not increased in second grade.

Third-grade classrooms were included in 1998-99, and test results suggest that statistically significant positive effects of SAGE, which occurred in first grade, were maintained in second and third grade. In 1998-99, African American SAGE students performed significantly higher on every subtest and total score over African American Comparison students on the third grade test.

In 1999-00 second-grade SAGE students, when adjusted for pre-existing differences in academic achievement, attendance, socioeconomic status and race, showed a significant achievement advantage over their Comparison group counterparts in all areas with the exception of reading when the first-grade post-test was used to adjust for achievement differences. When using the first-grade post-test as the baseline, African American SAGE students made larger gains than students in Comparison schools on every test except in reading, but the gains were not statistically significant. While African American

students, as a group, scored significantly lower than white student in both SAGE and Comparison schools, the gap between African American and white student is larger in Comparison schools.

SAGE third-grade students in 1999-00, when adjusted for pre-existing differences, showed significant improvement over their Comparison school counterparts from the beginning of first grade to the end of third grade across all academic areas. From the beginning of second grade (first-grade post-test) significant additional differences in gains were seen in mathematics. From the beginning of third grade (second-grade post-test) to third-grade post-test no significant additional differences in gain advantage were found. Gains made by African American versus white students were significantly better in SAGE schools from the beginning of first grade to the end of third grade. The opposite pattern was observed in Comparison schools.

Overall, analyses of test results at the class level suggest that students in smaller classrooms tend to score significantly higher in language arts, mathematics, and reading as well as total score after adjusting for individual pre-test results, socioeconomic status, and attendance. In other words, classrooms with fewer students are more likely to have higher class average achievement scores and are more likely to contribute to closing the achievement gap between African American and white students than classrooms with a higher number of students.

#### School and Classroom Findings 1996-00

To more fully understand the impact of the SAGE program, it is important to understand how SAGE schools structure classrooms and implement the four SAGE components: 1) reduced student-teacher ratio, 2) rigorous curriculum, 3) staff development, and 4) lighted schoolhouse. Together, the information from all facets of the SAGE program provides a description of life in SAGE classrooms and schools and a more complete picture of the impact of the SAGE program on student performance.

#### School Level Findings

The Teacher Questionnaire and Principal Interviews, both completed in May 1997 and May 1998, were the sources of data regarding *rigorous curriculum* implementation. The Teacher Questionnaire contained a section on classroom curriculum designed to determine the congruence of SAGE classroom curricula with professional curriculum standards. First-grade and second-grade teacher responses indicated that their reading/language arts curriculum and mathematics curriculum were quite congruent with professional standards. Principal responses to curriculum-related questions suggested that a rigorous curriculum included basic skills, problem solving, and higher-level thinking. Only a few principals seemed to believe that the curriculum of their school was rigorous in every aspect. However, most SAGE principals regarded substantial parts of their curriculum as strong. A section of the Teacher Questionnaire contained *staff development* questions. Teachers were asked about their individual level of professional development as well as the extent to which their school district provided staff development programs. About 60 percent indicated that they had a written development plan and it was determined by the teachers themselves. Data regarding implementation of *lighted schoolhouse* activities for 1996-97 and 1997-98 were obtained from the Principal Interviews and year-end reports required by DPI. Principal Interview data suggested that SAGE schools took responsibility for the conception and operation of the lighted schoolhouse activities and that the number of lighthouse activities and number of participants in the activities had progressively increased.

In 1998-99 and 1999-00, a revised teacher questionnaire (Appendix E) and a principal questionnaire (Appendix F) were used to gather data. Principals indicated increasing implementation in curriculum, staff development, and lighted schoolhouse activities. Teachers described individualized instruction, teacher enthusiasm, fewer discipline problems, and increased student engagement as prominent features of their teaching and generally perceived curricula to be congruent with national standards. Slightly less than half of the teachers reported having a personal, written professional development plan. Regarding parent contact, teachers indicated that most of the communication occurs in conversations and phone calls, notes sent home, and parental visits to the school.

#### Classroom Level Findings

Data from 1996-97 and 1997-98 suggested that the main change that results from having a reduced size class is individualization. Teachers focus on individual learning needs through one-to-one, small groups, and total class teaching. This focus on individuals came about because teachers knew students better, had more time for teaching because of reduced need for discipline, and were more enthusiastic about teaching, all which resulted from having fewer students.

The type of instruction that students encountered in SAGE classrooms was predominantly teacher centered. Listening, practicing, receiving help, and answering accounted for the main portion of the learning that occurred. Although teachers indicated that student-centered activities such as creating, manipulating, and problem solving increased somewhat because of reduced class size, student-centered teaching played only a supplemental role in most SAGE classrooms.

In regard to teaching and learning among the different types of SAGE classes and between grades one and two, few differences were observed. Three case studies of different types of SAGE schools were conducted in 1998-1999. The case studies provided portraits of the functioning of SAGE schools and classrooms. Findings at the classroom level illustrated the various ways teachers individualize instruction and engage in interactive exchanges with students.

In 1999-00 observation and interview data of select first-grade classrooms revealed differences between higher- and lower-achieving classrooms in how teachers take advantage of the opportunities provided by reduced-size classes. Taken together, analyses of teaching in SAGE higher-achieving first-grade classrooms revealed an instructional emphasis on academic learning; use of a variety of teaching strategies; and frequent use of teacher-directed basics-oriented individualization with special emphasis on student articulation of understandings, teacher critique, and re-teaching. Teachers in higher-achieving classrooms showed a preference for structured, goal-oriented instruction and classrooms with established routines where learning proceeds at a quick pace. Teachers in lower-achieving first-grade classrooms tended to believe that the primary advantages of a reduced-size class are the opportunity to develop critical thinking, to permit students to choose their activities, and to implement more activities and problem solving lessons.

## 2000-2001 SAGE EVALUATION

### Descriptions and Definitions

#### Schools

During 2000-01, the SAGE program was continued in 30 schools located in 21 school districts throughout the state, as shown in Table 1. In addition, the SAGE evaluation included data from 15 Comparison schools located in 11 SAGE school districts. The number of Comparison schools in 2000-01 reflects a reduction by one school from the previous year.

**Table 1. SAGE Schools 2000-2001**

<b>SAGE DISTRICTS AND SCHOOLS</b>	
<b>DISTRICT</b> School	<b>DISTRICT</b> School
<b>ADAMS-FRIENDSHIP AREA</b> Adams Elementary	<b>MENOMINEE INDIAN</b> Keshena Primary
<b>BELOIT</b> Robinson Elementary	<b>MENOMONIE AREA</b> River Heights Elementary
<b>CUDAHY</b> Parkview Elementary	<b>MILWAUKEE PUBLIC SCHOOLS</b> Carleton Elementary Fairview Elementary Longfellow Elementary Maple Tree Elementary Maryland Avenue Elementary Sherman Elementary Wisconsin Conservatory
<b>GILMAN</b> Gilman Elementary	
<b>GLIDDEN</b> Glidden Elementary	
<b>GREEN BAY AREA</b> Jefferson Elementary	
<b>JANESVILLE</b> Wilson Elementary	<b>PRENTICE</b> Ogema Elementary Tripoli Elementary
<b>KENOSHA</b> Durkee Elementary	<b>SIREN</b> Siren Elementary
<b>LAC DU FLAMBEAU #1</b> Lac Du Flambeau Elementary	<b>PORT WING</b> South Shore Elementary
<b>LACROSSE</b> Franklin Elementary Hamilton Elementary	<b>SUPERIOR</b> Blaine Elementary Cooper Elementary
<b>LAONA</b> Robinson Elementary	<b>SURING</b> Mountain Elementary
<b>MADISON METROPOLITAN</b> Glendale Elementary	<b>WEBSTER</b> Webster Elementary

## Students

In 2000-2001, the SAGE evaluation involved a total of 2,474 students in third grade. The characteristics of students in SAGE and Comparison schools are displayed in Table 2.

**Table 2.** Characteristics of SAGE and Comparison Students 1996-97, 1997-98, 1998-99, 1999-00, and 2000-01

Characteristic	Percent of Students* SAGE					Percent of Students* Comparison				
	96-97	97-98	98-99	99-00	00-01	96-97	97-98	98-99	99-00	00-01
<b>Gender</b>										
Female	48.6	48.4	48.6	48.6	48.5	49.4	48.5	48.7	48.2	45.8
Male	51.4	51.6	51.4	51.3	49.3	50.6	51.5	51.3	51.8	52.6
<b>Race/Ethnicity</b>										
African American	24.8	26.3	22.4	25.3	24.9	32.9	24.7	19.7	27.4	24.9
Asian	5.7	5.2	4.8	5.2	5.5	5.5	5.6	5.9	6.5	5.9
Hispanic	6.6	6.5	6.4	7.8	7.9	8.0	10.0	9.5	12.5	15.8
Native American	11.7	10.3	10.9	10.4	10.9	1.4	1.5	1.5	1.3	1.2
White	48.8	43.8	44.2	46.9	46.6	49.0	52.2	53.4	48.5	46.3
Other	1.6	2.0	1.8	1.4	1.6	2.7	2.3	2.3	2.4	2.7
<b>Subsidized Lunch Eligibility</b>										
Free	57.7	54.0	52.7	53.1	49.7	49.4	43.4	40.7	48.4	40.1
Reduced	10.9	10.6	11.5	12.3	15.0	9.9	8.9	10.4	11.2	19.1
Not Eligible	31.4	35.4	35.8	31.6	32.0	40.7	47.7	48.8	38.6	37.7
<b>Repeating Grade</b>	3.2	2.7	2.0	1.6	0.8	2.6	2.0	1.5	1.0	0.0
<b>English as Second Language</b>	8.2	7.9	7.5	7.0	6.6	4.9	6.4	6.7	9.2	9.5
<b>Referred to M-Team</b>	13.6	9.6	12.7	13.2	11.4	9.2	6.8	9.1	11.3	10.2
<b>Exceptional Education Need</b>	13.1	10.0	12.7	13.7	11.3	9.7	7.1	1.3	11.1	10.4

(\*Percentages may not always total to 100% due to incomplete reports submitted by some schools.)

During the course of the 2000-01 school year, records were compiled on 2,474 students. Some students withdrew from SAGE and Comparison schools during the year, while others enrolled as new students. The number of students in SAGE and Comparison schools by grade and school year can be seen in Table 3.

**Table 3.** Number of Students in SAGE and Comparison Schools by Grade and School Year

	SAGE					COMPARISON*				
	1996-97	1997-98	1998-99	1999-00	2000-01	1996-97	1997-98	1998-99	1999-00	2000-01
Kindergarten	1494	1524	1416	NA	NA	820	676	887	NA	NA
First Grade	1723	1567	1525	NA	NA	1001	985	983	NA	NA
Second Grade	NA	1541	1446	1636	NA	NA	868	1047	991	NA
Third grade	NA	NA	1531	1611	1542	NA	NA	1041	1045	932
Totals	3217	4632	5918	3247	1542	1821	2529	3958	2036	932

\*The number of Comparison schools participating in the study since 1996 has fluctuated from 14 to 17. Student numbers for Comparison schools reflect this fluctuation.

Table 4 illustrates the stability of student enrollment for SAGE and Comparison schools by school year. The data were obtained from student profiles completed by the schools. SAGE classrooms and Comparison classrooms are naturally occurring classrooms. This means that class composition is not held stable; new students enter classes and others withdraw from school during the course of the school year. Some students move from a SAGE School to a Comparison School and vice versa.

**Table 4.** Enrollment Changes in Sage and Comparison Schools by School Year (Number of Students)

	SAGE					Comparison				
	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	1996-1997	1997-1998	1998-1999	1999-2000	2000-2001
<b>Fall Enrollment</b>	3271	4544	6107	3005	1503	1884	2522	4128	1873	883
<b>New Students</b>	249	294	400	242	133	103	172	321	162	88
<b>Withdrawals</b>	362	522	484	222	95	204	714	420	133	38
<b>From SAGE to Comparison</b>	7	11	7	1	1	7	11	7	1	1
<b>From Comparison to SAGE</b>	6	8	7	4	2	6	8	7	4	2
<b>Spring Enrollment</b>	3157	4313	6023	3028	1542	1784	1983	4029	1899	932

### Classrooms

SAGE schools reduced class size in several ways in order to meet statutory requirements. The SAGE legislation defines class size as "the number of pupils assigned to a regular classroom teacher." In practice, reduced class size has been interpreted as a 15:1 student-teacher ratio (number of students per teacher in one classroom). Implementation occurs in the following ways:

- A *Regular* classroom refers to a classroom with one teacher. Most *regular* classrooms have 15 or fewer students, but a few exceed 15.
- A *2-Teacher Team* classroom is a class where two teachers work collaboratively to teach as many as 30 students.
- A *Shared-Space* classroom is a classroom that has been fitted with a temporary wall that creates two teaching spaces, each with one teacher and about 15 students.
- A *Floating Teacher* classroom is a room consisting of one teacher and about 30 students, except during reading, language arts, and mathematics instruction when another teacher joins the class to reduce the ratio to 15:1.

Three other types of classroom organization have also been utilized in the SAGE program, but to a limited extent. One type is the *Split Day* classroom consisting of 15 students and two teachers, one who teaches in the morning and one who teaches in the afternoon. Another type is the *3-Teacher Team* classroom where 45 students are taught collaboratively by three teachers. These two types of classroom organization were not used in 2000-01. A third type consists of a *full time and part time teacher* combination to reduce class size for part of the day. The types of classroom organization utilized in 2000-01 are displayed in Table 5.

**Table 5.** Number of SAGE Classrooms by Type and Grade 2000-01

	Regular 15:1	Team Taught 30:2	Floating Teacher	Shared Space	1 Full Time & 1 Part Time Teacher
Kindergarten	53	14	NA	8	2
Grade 1	69	12	1	6	1
Grade 2	53	14	3	6	1
Grade 3	61	10	NA	10	8
Mixed	9	1	1	1	NA

SAGE classes range in number of students from 7 to 34. To determine the student-teacher ratio in SAGE classrooms, the type of classroom, as can be seen in Table 5, is taken into consideration. Regular 15:1 and shared space classrooms provide an instructional context where one teacher is responsible for approximately 15 students. Of the 93 SAGE classrooms, 74 classrooms (including mixed grades) fell into the category of 15:1, and 19 classrooms (including mixed grades) were of a team taught or full time/part time type of classroom. To determine the average class size, team taught classes were allotted 2 teachers and full time/part time classes were allotted 1.5 teachers. The teacher to student ratio for SAGE and Comparison classrooms can be seen in Table 6.

**Table 6.** Student-Teacher Ratio for SAGE and Comparison Classrooms 2000-01 (number of third-grade classrooms)

Students Per Teacher	SAGE Classrooms	Comparison Classrooms
	Third Grade	Third Grade
7-13 Students	27	4
14-16 Students	41	1
17+ Students*	25	36
Average Class Size	14.27	22.73

\*Includes team taught and full time/part time classrooms.

### Data Collection Instruments

To provide information about the processes and outcomes of the SAGE program for 1996-97, 1997-98, 1998-99, 1999-00, and 2000-01, a number of instruments were used as part of the evaluation.<sup>1</sup> A description of the test and non-test instruments used in 1996-97, 1997-98, 1998-99, 1999-00, and 2000-01 follows. The data collection instruments and the plan for their use throughout the evaluation are displayed in Table 7.

1. *Comprehensive Test of Basic Skills (CTBS)* (1996-97, 1997-98, 1998-99, 1999-00, 2000-01). The Comprehensive Test of Basic Skills (CTBS) complete Battery, Terra Nova edition, Level 10, was administered to first-grade students in SAGE schools and Comparison schools in October 1996 and May 1997. In 1997-98, Level 10 was administered in October and Level 11 in May to first-grade students and Level 12 to second-grade students. In 1998-99, Level 10 was administered in October and Level 11 in May to first-grade students, Level 12 to second-grade students, and Level 13 to third-grade students. The purpose of the first grade October administration of the CTBS was to obtain baseline measures of achievement for SAGE schools and Comparison schools. For 1999-00, second- and third-grade students were tested in the spring. In 2000-01, only third-grade students were tested in the spring.\*

\*This year the Milwaukee Public Schools adopted the Basic Multiple Assessments Plus test to test all third-grade students in the district. To avoid compromising the testing for both the SAGE Evaluation Project and the Milwaukee Public Schools, an agreement was reached to have the third-grade SAGE students in the Milwaukee Public Schools take the Basic Multiple Assessments Plus test during the SAGE testing window. The Basic Multiple Assessments Plus test contains more subtests than the Comprehensive Test of Basic Skills (CTBS) used in the SAGE Evaluation; however, both tests are Level 13 Form A and are on the same scale.

The complete battery includes sub-tests in reading, language arts, and mathematics. The CTBS was chosen as an achievement measure because it is derived from an Item Response Theory (IRT) model that allows comparison of performance across time. Moreover, it is one of a few instruments that attempts to minimize items biased against minorities and educationally disadvantaged students. Kindergarten students were not tested because of (1) concerns over the reliability and validity of standardized test results for kindergarten-aged children and (2) the view expressed by many kindergarten teachers that standardized tests would have a traumatizing effect on their students. The effects of SAGE on kindergarten students will be determined when they are tested as first-grade students the following year.

2. *Student Profiles* (1996-97, 1997-98, 1998-99, 1999-00, 2000-01). This instrument, completed in October and February, provided demographic and other data on each SAGE school and Comparison school student.
3. *Classroom Organization Profile* (1996-97, 1997-98, 1998-99, 1999-00, 2000-01). Completed in October, this instrument was used to record how SAGE schools attained a 15:1 student-teacher ratio.
4. *Principal Interviews* (1996-97 and 1997-98). These end-of-year interviews elicited principals' descriptions and perceptions of effects of their schools' rigorous curriculum, lighted-schoolhouse activities, and staff development program, as well as an overall evaluation of the

<sup>1</sup>See the *Evaluation Design Plan for the Student Achievement Guarantee in Education (SAGE) Program*, August 13, 1996, for complete details.

- SAGE program. In 1998-99, principal interviews were conducted in the schools selected for case studies.
5. *Teacher Questionnaire* (1996-97, 1997-98, 1998-99, 1999-00, 2000-01). Administered in May, this instrument obtained teachers' descriptions and judgments of the effects of SAGE on teaching, curriculum, family involvement, and professional development. It also was used to assess overall satisfaction with SAGE.
  6. *Teacher Activity Log* (1996-97, 1997-98). This instrument required teachers to record classroom events concerning time use, grouping, content, and student learning activities for a typical day three times during the year.
  7. *Student Participation Questionnaire* (1996-97, 1997-98). In both October and May, teachers used this instrument to assess each student's level of participation in classroom activities.
  8. *Classroom Observations* (1996-97, 1997-98, 1998-99, 1999-00, 2000-01). A group of first-grade, second-, and third-grade classrooms representing the various types of 15:1 student-teacher ratios and a range of geographic areas was selected for qualitative observations to provide descriptions of classroom events.
  9. *Teacher Interviews* (1996-97, 1997-98, 1998-99, 1999-00, 2000-01). Although in-depth teacher interviews were not part of the original SAGE evaluation design, they were added in 1997-98 because it became apparent that teachers had important stories to tell about their SAGE classroom experiences. The interviews deal with teachers' perceptions of the effects of SAGE on their teaching and on student learning.
  10. *Principal Questionnaire* (1998-99, 1999-00, 2000-01). The Principal Questionnaire was administered to all SAGE principals in spring beginning in 1998-99. Principals were asked to rate and comment on teaching, rigorous curriculum, staff development, and lighted schoolhouse activities.
  11. *Case Studies* (1998-99). Case studies of teaching in three schools, each representing a different type of SAGE class configuration, were conducted continuously throughout the school year in 1998-99. At grades one, two and three, classrooms were observed in reading-language arts instruction and mathematics instruction and teachers were interviewed. Interviews with the principal and parents were also conducted.
  12. *Classroom Studies* (1999-00 and 2000-01). In 1999-00, the teaching behaviors used by a group of highly effective, reduced class size first-grade SAGE teachers were compared to the teaching behaviors used by a group of less effective, reduced class size first-grade SAGE teachers using qualitative research procedures. In 2000-01, these classroom studies were extended to selected second- and third-grade classrooms.

**Table 7. SAGE Data Collection by Grade Level, 1996–01**

	1996–97	1997–98	1998–99	1999-2000	2000-2001
CTBS Fall, Spring Spring	1	1 2	1 2, 3	2, 3	3
Student Profiles Fall, Spring	1	1, 2	1, 2, 3	2, 3	3
Classroom Organization Profile Fall	1	1, 2	1, 2, 3	2, 3	3
Principal Interviews Spring	yes	yes	yes (selected)		
Teacher Questionnaire Spring	K, 1	K, 1, 2	K, 1, 2, 3	K, 1, 2, 3	K, 1, 2, 3
Teacher Activity Log Fall, Winter, Spring	K, 1	K, 1, 2	discontinued		
Student Participation Questionnaire Fall, Spring	K, 1	K, 1, 2	discontinued		
Classroom Observation Fall, Spring	1 (selected)	1, 2, (selected)	1, 2, 3 (selected)	1 (selected)	2, 3 (selected)
Teacher Interview Fall/Spring	1 (selected)	1, 2 (selected)	1, 2, 3 (selected)	1 (selected)	2,3 (selected)
Principal Questionnaire Spring	NA	NA	yes	yes	yes
School Case/Classroom Studies by grade level	NA	NA	1, 2, 3 (selected)	1 (selected)	2, 3 (selected)

## ANALYSIS OF STUDENT ACHIEVEMENT OUTCOMES 2000-2001 Third-Grade Results

### Descriptive Statistics

Valid Test Scores. Analyses were conducted to assess the impact of SAGE on the 2000-01 third-grade CTBS Complete Battery, Terra Nova Level 13\* post-test results. The number of third-grade students with valid test scores for the Fall 1998 first-grade pre-test, the Spring 1999 first-grade post-test, the Spring 2000 second-grade test, or the Spring 2001 third-grade test are presented in Table 8.

**Table 8.** Number of 2000-01 Third-Grade Students with Valid First-Grade Pre-Test, First-Grade Post-Test or Second-grade test Scores

	<u>Fall 1998 First-Grade Pre-test</u>		<u>Spring 1999 First-Grade Post-test</u>		<u>Second-grade test 2000</u>		<u>Third-grade test 2001</u>	
	<u>SAGE</u>	<u>Comp</u>	<u>SAGE</u>	<u>Comp</u>	<u>SAGE</u>	<u>Comp</u>	<u>SAGE</u>	<u>Comp</u>
Reading	870	495	879	513	1024	597	1403	823
Language Arts	870	495	879	513	1024	597	1403	823
Mathematics	874	493	879	505	1026	593	1405	827
Total	866	488	873	497	1014	581	1397	813

In the analyses to follow, third-grade test results are compared to the first-grade pre-test, the first-grade post-test, and the second-grade test. Therefore, only those third-grade students with valid third-grade scores who also had valid first-grade pre-test scores, first-grade post-test scores and second-grade test scores were used in the respective 2000-01 third-grade analysis. Respective sample sizes are those shown in Table 8.

\*This year the Milwaukee Public Schools adopted the Basic Multiple Assessments Plus test to test all third-grade students in the district. To avoid compromising the testing for both the SAGE Evaluation Project and the Milwaukee Public Schools, an agreement was reached to have the third-grade SAGE students in the Milwaukee Public Schools take the Basic Multiple Assessments Plus test during the SAGE testing window. The Basic Multiple Assessments Plus test contains more subtests than the Comprehensive Test of Basic Skills (CTBS) used in the SAGE Evaluation; however, both tests are Level 13 Form A and are on the same scale.

Table 9 shows the standard score means and standard deviations for those students with valid third-grade test scores who also had valid first-grade pre-test scores, first-grade post-test scores or second-grade scores. Table 10 shows the standard score and normal curve equivalent scores for SAGE and comparison students with valid third-grade scores.

**Table 9.** Standard Score Descriptive Statistics (Means and Standard Deviations) for First-Grade Pre-Test and Post-Test and Second-Grade Test (SAGE and Comparison) for 2000-01 Third-grade Students with Valid Test Scores

	<u>First-grade pre-test</u>		<u>First-grade post-test</u>		<u>Second-grade test</u>	
	<u>SAGE</u>	<u>Comp</u>	<u>SAGE</u>	<u>Comp</u>	<u>SAGE</u>	<u>Comp</u>
Reading	540.810	544.022	583.742	580.799	612.768	608.794
(sd)	36.784	39.785	40.122	38.791	34.008	33.720
Language Arts	541.979	543.236	589.928	585.316	616.065	607.02
(sd)	42.130	44.656	40.237	43.674	40.599	37.943
Math	502.308	505.045	543.586	534.816	580.229	562.993
(sd)	37.865	39.622	37.295	40.753	40.780	40.708
Total	528.439	530.830	572.502	567.191	603.270	593.243
(sd)	34.026	34.977	33.070	35.717	33.239	33.068

**Table 10.** Third-Grade SAGE and Comparison 2000-01 Descriptive Statistics for Those with Valid Third-Grade Scores

	<u>Scale Scores</u>				<u>Normal Curve Equivalent</u>			
	<u>SAGE</u>		<u>Comparison</u>		<u>SAGE</u>		<u>Comparison</u>	
	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>
Reading	634.170	36.738	626.656	41.032	52.358	18.520	48.853	19.513
Language Arts	631.277	35.323	624.885	36.049	51.468	18.203	48.170	18.408
Mathematics	610.116	34.477	589.340	38.307	51.588	17.504	45.811	18.480
Total	625.352	31.694	617.150	34.469	52.238	17.641	47.861	18.609

As would be expected, the number of third-grade students having all four valid test scores was substantially less than the total number of third-grade students tested. Those students with valid test scores and present in the 1998-99 SAGE and Comparison first-grade classrooms, the 1999-2000 SAGE and Comparison second-grade classrooms, and the 2000-01 SAGE and Comparison third-grade classrooms were termed “three-year persisters”. There were 1212 three-year persisters, of which 779 were students in the SAGE schools and 433 were students in the Comparison schools. It should be noted that some persisters did not take all four CTBS tests at each point in time. Table 11 shows the number of 2000-01 third-grade persisters who took the test battery or one or more of the sub-tests at each of the four testing points.

**Table 11.** Number of 2000-01 Third-Grade Persisters with Valid First-Grade Pre-Test, Post-Test, or Second-Grade Test Scores in Total Scale and/or one or more Sub-Tests

-	<u>Fall 1997 First-grade pre-test</u>		<u>Spring 1998 First-grade post-test</u>		<u>Second-grade test 1999</u>		<u>Third-grade test 2000</u>	
	<u>SAGE</u>	<u>Comp</u>	<u>SAGE</u>	<u>Comp</u>	<u>SAGE</u>	<u>Comp</u>	<u>SAGE</u>	<u>Comp</u>
Reading	779	433	779	433	779	433	779	433
Language Arts	779	433	779	433	779	433	779	433
Mathematics	779	425	779	425	779	425	779	425
Total	765	412	765	412	765	412	765	412

First-Grade and Second-Grade (Baseline) “Persister” Scores. Table 12 provides descriptive statistics on the scale scores from the first-grade pre-test, first-grade post-test, and second-grade test for third-grade persisters. Table 13 provides descriptive statistics for the third-grade test for these persisters.

**Table 12.** Descriptive Statistics Means (and Standard Deviations) on CTBS First-Grade Pre-Test and Post-Test and Second-Grade Test (SAGE and Comparison) for 2000-01 Third-Grade Persisters

	<u>First-Grade Pre-Test</u>		<u>First-Grade Post-Test</u>		<u>Second-grade test</u>	
	<u>SAGE</u>	<u>Comp</u>	<u>SAGE</u>	<u>Comp</u>	<u>SAGE</u>	<u>Comp</u>
Reading	542.496	545.390	586.009	582.979	614.795	611.681
(sd)	36.598	38.727	39.931	38.336	33.987	32.232
Language Arts	544.874	545.277	592.223	588.702	618.861	610.903
(sd)	40.534	43.450	39.479	42.762	40.008	37.815
Math	504.368	507.649	545.089	538.666	581.403	567.809
(sd)	37.091	39.235	38.123	41.053	39.657	41.078
<b>Total</b>	530.906	533.279	574.831	570.519	605.365	597.393
(sd)	33.197	33.550	32.992	35.594	32.596	32.670

**Table 13.** SAGE and Comparison 2000-01 Descriptive Statistics CTBS Third-Grade Test for Third-Grade Persisters

	<u>Scale Scores</u>				<u>Normal Curve Equivalent</u>			
	<u>SAGE</u>		<u>Comparison</u>		<u>SAGE</u>		<u>Comparison</u>	
	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>
Reading	638.057	34.415	635.104	39.676	54.607	17.662	53.097	19.351
Language Arts	635.730	33.978	632.173	35.779	53.837	17.599	52.069	18.173
Mathematics	614.130	33.663	607.162	36.522	53.611	17.054	50.064	18.042
Total	629.816	30.052	625.587	33.383	54.698	16.849	52.488	18.391

Difference of Means Test. Results comparing mean differences between SAGE and Comparison student scores from the 2000-01 third-grade test are reported in Table 14. Third-grade SAGE students scored significantly higher than Comparison students in all areas of the test. Table 15 shows these same statistics for third-grade persisters. Persisting SAGE students did not score significantly better than persisting Comparison students in Reading and Language Arts. These gains have not been corrected for pre-existing differences between groups on factors such as prior achievement, attendance, race and SES.

**Table 14.** Differences of Means Test 2000-01 Third-Grade Test

	SAGE	Comparison	Difference
Reading	634.17	626.66	7.51*
Language Arts	631.28	624.88	6.39*
Mathematics	610.12	598.34	11.78*
Total	625.35	617.15	8.20*

\*significant at .05 level

**Table 15.** Differences of Means Test 2000-01 Third-Grade Test for Third-Grade Persisters

	SAGE	Comparison	Difference
Reading	638.51	635.10	3.40
Language Arts	635.73	632.17	3.56
Mathematics	614.13	607.16	6.97*
Total	628.82	625.59	4.23*

\*significant at .05 level

The results comparing SAGE and Comparison student scale score changes from the Fall 1998 first-grade pre-test, Spring 1999 first-grade post-test, Spring 2000 second-grade test to the Spring 2001 third-grade test are reported in Table 16. These results reflect comparisons on an individual student level, the differences in gain scores between SAGE and Comparison students for those students with valid scores at the two comparative points. Table 17 shows this same comparison for students with valid scores at all four testing points.

When the first-grade pre-test is used as the baseline score, SAGE students made significantly higher gains than did Comparison students in all sub-tests and in the total score. The largest gain in SAGE student scores was on the mathematics sub-test. The smallest relative gain for SAGE students was on the language sub-scale, but even this gain was significant. When the first-grade post-test is used as the baseline score, no significant changes were found. When the second-grade test scores are used for a baseline, Comparison students began closing the gap outperforming SAGE students in all areas except reading. This suggests that the positive effects of SAGE are most noticeable in the first grade and that some of this gain is lost in the third grade.

**Table 16.** SAGE and Comparison Unadjusted Gain for Third Graders, 2000-01

Scale Score	From First-grade pre-test to Third-grade test			From First-grade post-test to Third-grade test			From Second-grade test to Third-grade test		
	SAGE Gain	Comp Gain	Gain Diff.	SAGE Gain	Comp Gain	Gain Diff.	SAGE Gain	Comp Gain	Gain Diff.
Reading	95.776	88.299	7.477*	53.573	52.123	1.451	24.527	23.345	1.182
Language	91.868	87.327	4.541*	44.212	44.953	-.742	18.023	22.854	-4.831*
Mathematics	110.372	99.083	11.289*	69.551	69.010	.541	32.944	40.525	-7.581*
Total	99.435	92.049	7.386*	55.746	55.499	.247	25.175	29.019	-3.844*

\*significant at .05 level

**Table 17.** SAGE and Comparison Unadjusted Gain for Third-Grade Persisters, 2000-01

Scale Score	From First-grade pre-test to Third-grade test			From First-grade post-test to Third-grade test			From Second-grade test to Third-grade test		
	SAGE Gain	Comp Gain	Gain Diff.	SAGE Gain	Comp Gain	Gain Diff.	SAGE Gain	Comp Gain	Gain Diff.
Reading	96.012	89.714	6.298*	52.498	52.125	.373	23.713	23.423	.290
Language	90.856	86.896	3.960	43.507	43.471	.036	16.869	21.270	-4.401*
Mathematics	109.761	99.513	10.248*	69.041	68.497	.545	32.727	39.353	-6.626*
Total	98.910	92.308	6.602*	54.984	55.068	-.084	24.451	28.194	-3.743*

\*significant at .05 level

### Regression Analysis

The gains depicted in the above tables do not reflect group differences adjusted for socioeconomic status, ethnicity, attendance and prior knowledge. In order to correct for group differences related to these factors, regression analysis was employed. Essentially, regression analysis allows for a statistical adjustment that "equalizes" the groups on factors where pre-existing differences exist.

**Regression Models.** The effect of the SAGE program on student achievement for third graders was also tested through a series of ordinary least squares regression models for each sub-test and total scale score. Control variables were again entered into the models in blocks, with the SAGE/Comparison student variable entered into the models last. In addition, three different regressions were done for each

sub-test and total scale score. In each analysis students with valid test scores at both points in time (third-grade scores and pre-test point) were included. It should be noted that a proportion of the students included in the analyses using the second-grade pre-test point did not have a first-grade SAGE exposure. A possible inference one can draw is that the overall SAGE effect may be suppressed in these analyses because of this non-exposure.

The first regression used the first-grade pre-test as a predictor variable (Table 18), the second regression used the first-grade post-test as a predictor variable (Table 19), and the third regression used the second-grade test as a predictor variable (Table 20).

The first block of control variables included student scores on the first-grade pre-test or post-test, attendance, and eligibility for subsidized lunch as an indicator of family income. As with second graders (discussed earlier), the second block of control variables added dummy variables for race/ethnicity. Finally, a dummy variable for SAGE or Comparison school students was added on the third block. This variable is coded 0 if a student is from a Comparison school and 1 if a student is from a SAGE school.

**Regression Results.** Results of the regression analyses are presented in Tables 18-20. When the first-grade pre-test is used as the predictor variable, membership in SAGE emerges as a significant predictor of student achievement on the total score and for all sub-tests. The magnitude of the effect of SAGE on student achievement, as denoted by the unstandardized regression coefficient, varies depending on the CTBS sub-test.

The largest effects of SAGE are found when the first grade mathematics pre-test is used to predict the third-grade test (12.374). When all cases are analyzed, the goodness-of-fit of the models (as denoted by the adjusted R square statistic), ranges from .25 in reading to .44 on the Total scale. Most of the variance is explained by the baseline scores (either the first-grade pre-test, first-grade post-test, or second-grade test). "Lunch Eligibility" and "Race" show some relatively large effects, and these effects are usually statistically significant. This suggests that a student from low socio-economic status will have lower test scores.

**Table 18.** Scale Scores Regression – Third Grade Block Three Unstandardized Coefficients: First-Grade Pre-test as Control, 2000-01

	Reading	Language Arts	Math	Total
Pre-Test Score	.385*	.391*	.487*	.553*
Days Absent	-.142*	-.075	-.164	-.107
Lunch Eligibility	-6.259*	-5.028*	-4.090*	-4.090*
African American	-3.505	-1.386	-11.289*	-6.043*
White	4.504*	2.513	-.138	-.089
SAGE	7.679*	5.283*	12.374*	8.409*
Constant	432.807	426.589	367.216	337.086
Adjusted R Squared	.250	.297	.388	.435
Standard Error	31.82	29.55	28.20	24.43
*significant at .05 level				

This same general pattern is repeated when the first-grade post-test is used as the control (Table 19) although the effects of SAGE are not as large. Table 20 shows that when the second-grade post-test is used as the control, the effects of SAGE are generally small and with the exception of the reading subtest, not significant.

**Table 19.** Scale Scores Regression – Third-Grade Block Three Unstandardized Coefficients: First-Grade Post-Test as Control, 2000-01

	Reading	Language Arts	Math	Total
Pre-Test Score	.442*	.411*	.500*	.593*
Days Absent	-.015	.006	-.087	.001
Lunch Eligibility	-4.446*	-4.760*	-4.727*	-3.389*
African American	-.904	2.638	-10.318*	-2.853
White	7.239*	3.853	1.751	2.699
SAGE	4.920*	3.757*	7.747*	4.690*
Constant	379.747	394.763	344.404	289.912
Adjusted R Squared	.310	.297	.422	.477
Standard Error	30.44	29.51	27.06	23.30
*Significant at .05 level				

**Table 20.** Scale Scores Regression – Third-Grade Block Three Unstandardized Coefficients: Second-Grade Test as Control, 2000-01

	Reading	Language Arts	Math	Total
Pre-Test Score	.711*	.500*	.549*	.722*
Days Absent	-.141	-.080	-.039	-.045
Lunch Eligibility	-3.324*	-4.013*	-3.639*	-2.745*
African American	3.810	5.640*	-3.725	3.291*
White	3.684*	3.049	-1.194	.042
SAGE	3.483*	1.093	2.230	.546
Constant	202.915	330.806	301.586	197.602
Adjusted R Squared	.462	.354	.468	.573
Standard Error	27.70	28.69	26.14	21.50
*significant at .05 level				

### Effect Sizes

The sample sizes used in the third grade analyses above were very large. Consequently, even small group differences will result in statistically significant results. In order to better characterize the actual differences between groups, effect-size indicators were also constructed for the third grade. Effect sizes are interpreted as the group differences in terms of standard deviations. In general, effect sizes of .25 and below are considered modest, those from .25 to .50 are moderate, and those above .50 are large (Cohen, 1977). Two different indicators were used. First an “unadjusted” effect size was computed by dividing the difference between the SAGE and comparison post-test means by their pooled standard deviation. Because these means are affected by pre-test, SES, and attendance differences, a second effect size measure was computed adjusting for these differences. This second measure used the raw score regression coefficient for the SAGE dummy variable in the regression analysis (using first-grade pre-test) as an adjusted mean difference and divided this by the pooled standard deviation. The results of these computations for third grade are presented in Table 21.

**Table 21.** 2000-01 Adjusted and Unadjusted Effect Sizes, Grade 3

Mathematics		Reading		Language Arts		Total Score	
Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted	Adjusted	Unadjusted
.342	.327	.202	.198	.148	.180	.259	.248

### African American Students

African American third-grade students comprise the largest racial subgroup of test scores – roughly 23% of all SAGE students and 23% of all Comparison students. In the analyses to follow, African American students are first compared across SAGE and Comparison schools on the CTBS sub-tests and total scale score. Second, African American students are compared to white students across SAGE and Comparison schools on the CTBS total scale score. These analyses were conducted on students with valid test scores at both points in time.

Table 22 provides comparisons of means on the CTBS third-grade test, as well as change scores from the first-grade pre-test, first-grade post-test, and second-grade test to the third-grade test. On the third-grade test, African American SAGE students scored higher than African American Comparison school students on every sub-test and on the total scale score.

When using the first-grade pre-test as the baseline score, statistically significant change scores are found on all scores with the exception of Language Arts, with African American SAGE students outperforming African American Comparison students. Using the first-grade post-test as the baseline score shows African American SAGE students continuing to make gains on all subtests (except total) but the differences in these gains are not significant when compared with those of the Comparison students. Using the second-grade test as the baseline score shows differences in achievement gain between SAGE and Comparison African American students, again favoring the SAGE students although none of the differences are significant.

**Table 22.** African American Third-Grade Test and Change Scores, by SAGE or Comparison, 2000-01

Score	SAGE	Comparison	Difference
<b>Language Arts</b>			
Mean Third Grade Score	626.98 (352)	609.98 (213)	17.01*
Mean Change From First-grade pre-test to Third Grade	93.861 (165)	88.895 (95)	4.966

Mean Change From First-grade post-test to Third Grade	47.757 (169)	51.213 (108)	-3.456
Mean Change From Second-grade test to Third Grade	28.425 (221)	27.724 (134)	.702
<b>Reading</b>			
Mean Third Grade Score	627.51 (352)	609.96 (213)	17.55*
Mean Change From First-grade pre-test to Third Grade	94.170 (165)	81.863 (95)	12.307*
Mean Change From First-grade post-test to Third Grade	50.183 (169)	49.713 (108)	.471
Mean Change From Second-grade test to Third Grade	28.742 (221)	23.425 (134)	5.317
<b>Mathematics</b>			
Mean Third Grade Score	598.55 (353)	577.91 (213)	20.64*
Mean Change From First-grade pre-test to Third Grade	112.246 (167)	98.80 (95)	21.446*
Mean Change From First-grade post-test to Third Grade	64.768 (168)	62.606 (104)	2.162
Mean Change From Second-grade test to Third Grade	38.475 (219)	45.177 (136)	-6.702
<b>Total</b>			
Mean Third Grade Score	617.77 (351)	599.69 (212)	18.08*
Mean Change From First-grade pre-test to Third Grade	99.945 (164)	86.366 (93)	13.580
Mean Change From First-grade post-test to Third Grade	54.085 (165)	54.427 (103)	-.342
Mean Change From Second-grade test to Third Grade	32.316 (212)	31.546 (130)	.770
*significant at .05 level			

**African American and White Achievement.** African American students, as a group, scored lower than white students on the total scale scores at each grade level, as shown in Table 23. This result is statistically significant for both SAGE and Comparison schools. African American students continued to score significantly lower than white students on total scale score and on all sub-tests, regardless of whether they were SAGE or Comparison school students. No significant difference in the gains made by African-American students versus white students was observed for this cohort.

**Table 23.** Third-Grade African American and White Achievement on Total Scale Score, 2000-01

	First-grade pre-test	First-Grade Post-Test	Second-Grade Test	Third-Grade Test	Change From First-grade pre-test to Third Grade	Change From First-grade post-test to Third Grade	Change From Second Grade to Third Grade
<b>SAGE</b>							
African American	518.08	565.53	590.20	617.77	99.945	54.085	31.546
White	540.28	581.15	612.10	633.75	95.984	54.704	22.994
Difference	-22.20*	-15.62*	-21.90*	-15.98*	3.961	-.620	9.322
<b>Comparison</b>							
African American	505.85	547.11	575.62	599.69	86.366	54.427	32.316
White	531.50	572.13	601.59	629.17	91.725	55.227	26.305
Difference	-25.65*	-25.02*	-25.98*	-29.48*	-5.360	.800	5.241
*significant at .05 level							

### Hierarchical Linear Modeling

Many social science research analyses involve hierarchical data structures. Hierarchical data structures are those in which individual units are nested within larger units, the latter being the unit of interest. The SAGE data are a prime example: students are nested within classrooms, and it is the classroom effect that is of particular interest to the SAGE project. Hierarchical data structures pose special analytical challenges in that data analysis at the individual level may result in a biased impression of the effect of the nesting unit (in the SAGE case, the classroom). An analytical approach known as "hierarchical linear modeling" or HLM (Bryk & Raudenbush, 1992) was specifically designed to accommodate these types of data structures. HLM was used with the SAGE data to provide an alternative and less biased account of the effects of SAGE experience on test scores. In these models,

variables associated with individual students are referred to as level-1 variables and those associated with the classrooms are referred to as level-2 variables.

Analyses were conducted for each of the relevant criterion post-test scores: reading, mathematics, language arts, and total. For all analyses, the level-1 variables were pre-test achievement scores, SES measured as eligibility for subsidized lunch and "attendance" represented by days absent. For third grade classrooms, three such analyses were done, one using first-grade pre-test, one using first-grade post-test and another using second-grade post-test as baseline achievement measures.

The post-test scores were adjusted for these three (two) level-1 variables at the individual level in each analysis, therefore the effects may be thought of as being statistically independent of the effects of these variables. Three different level-2 models are reported here: one specifying "class size" as the only level-2 variable, one including both "class size" and "SAGE" variables, and the last including both "class SES" and "SAGE" variables. Class SES was computed as the student SES average within each class and was therefore a measure of class poverty. Thus, for each subject area and grade, multiple analyses were done utilizing each of the baseline measures for each of the three "models" described below.

Tables 24-26 provide a summary of the effects of each of the level-1 and level-2 variables for each of these analyses. Level-1 effects can be interpreted as the weighted average of the within-classroom effects of the level-1 variables. Level-2 effects can be interpreted as the classroom effects of the level-2 variables. The level-1 results indicate that within classrooms lower individual SES is related to lower post-test scores and higher pre-test scores are related to higher post-test scores. The coefficients associated with the level-2 variables can be thought of as classroom effects.

**Model A. Class Size.** These models examined the effect of class size on the adjusted criterion score. Class size equals the number of students divided by the number of teachers. The coefficient for the size variable can be interpreted as the loss (all coefficients were negative) in post-test score attributable to the addition of an additional student to the classroom. In general, the addition of each student results in a decrease of approximately one point in the class average in all academic scores. For example, in second-grade mathematics when first-grade pre-test was used as the baseline measure, each additional student added to the classroom could be expected to result in a 1.26 point decrease in the average mathematics post-test score for the classroom. The results for all scores show this effect to be significant for all analyses.

**Model B. Class Size, SAGE.** These models examined the effect of SAGE participation on the adjusted criterion score after the classrooms were class size adjusted, viewed as the effect of SAGE participation beyond the class size effect. Combining class size and SAGE participation in a single analysis isolates the effects that SAGE might have beyond those produced by lower class size. It should be noted that class size and SAGE are highly correlated variables and therefore the results are likely affected by multicollinearity problems (e.g., the coefficients are likely unreliable). The results show in general that once class size has been accounted for, SAGE has no significant effect on class average performance. This may suggest that the other SAGE interventions (i.e., rigorous curriculum, lighted school house, and staff development) are not having a significant impact on achievement in SAGE classrooms.

**Model C. Class SES, SAGE.** These models examined the effect of SAGE on the adjusted criterion score after the classrooms were SES adjusted, viewed as the effect of SAGE once the effects of the classroom SES are removed. Since socioeconomic status is known to have an influence on academic test scores, a replacement for this variable was used as both a level-1 and level-2 predictor. The level-2 variable was the average SES for the class and estimates the effect of the overall class SES level beyond that associated with the individual, which is accounted for in the level-1 model. This model combines class SES and SAGE. The results indicate that class SES has a significant effect on the class average post-test performance in all cases. The effect of a 1 point class average gain in SES equates to between a 17 point and 27 point gain on the average post-test score, depending on the sub-score. SES was measured on a three-point family income scale, thus a one point difference on average would be quite pronounced. The SAGE effect was significant in all cases. Within each subtest, it is noteworthy that the SAGE effect in this model remained relatively constant regardless of which baseline measure was used. This suggests that the classroom differences that exist due to SAGE are relatively constant from one grade to the next.

**Table 24.** HLM Results for 2000-01 Third-Grade Students: First-Grade Pre-Test as Initial Achievement

Source	Total	Reading	Language Arts	Mathematics
<i>Level 1</i>				
Pre-Test	.5621	.4432	.4500	.5543
SES	-2.2162	-4.6405	-3.0734	-3.1412
<u>Attendance</u>	-1.3576	-1.2980	-1.3205	-1.2138
<i>Level 2</i>				
A. Class Size	-.8963*	-.7310*	-.7107*	-1.2598*
B. Class Size	-.9272*	-.8675*	-.8050*	-1.2636*
SAGE	-.5299	-1.6034	-1.5998	-.0329
C. SAGE	12.0782*	9.8104*	8.7525*	16.6964*
SES	-22.3886*	-20.4537*	-17.4870*	-27.7312*

\*significant at .05 level

**Table 25.** HLM Results for 2000-01 Third-Grade Students – First-Grade Post-Test as Initial Achievement

Source	Total	Reading	Language Arts	Mathematics
<i>Level 1</i>				
Pre-Test	.6099	.5160	.4761	.5319
SES	-.7802	-2.9105	-1.3192	-2.9638
<u>Attendance</u>	-1.1995	-.9477	-.7128	-1.0085
<i>Level 2</i>				
A. Class Size	-.9471*	-.8177*	-.7149*	-1.3068*
B. Class Size	-1.0060*	-.8806*	-.8733*	-1.3619*
SAGE	-1.0475	-1.1059	-2.7153	-1.0510
C. SAGE	11.2661*	9.9087*	8.0952*	15.1724*
SES	-23.2672*	-20.7549*	-18.7439*	-27.5699*

\*significant at .05 level

**Table 26.** HLM Results for 2000-01 Third-Grade Students – Second-Grade Test as Initial Achievement

Source	Total	Reading	Language Arts	Mathematics
<i>Level 1</i>				
Pre-Test	.7743	.8140	.6264	.6295
SES	-1.4784	-3.1023	-2.3164	-1.3141
<u>Attendance</u>	-.0954	-.3133	-.3812	-.3432
<i>Level 2</i>				
A. Class Size	-.8398*	-.7170*	-.6446*	-1.2102*
B. Class Size	-.9426*	-.8240*	-.8190*	-1.2106*
SAGE	-2.1230	-1.8340	-3.0658	-.0096
C. SAGE	9.6704*	9.0714*	7.1381*	14.7427*
SES	-21.9766*	-19.5706*	-17.08084*	-24.5496*

\*significant at .05 level

### Additional Analyses

The 2000-01 SAGE data base provided the opportunity to re-examine some specific factors which might be related to student performance within SAGE schools at grades two and three. Specifically, the following research questions were addressed:

1. Is the number of years of SAGE program participation related to individual or class achievement gains in grade three?
2. Is the socio-economic status (as measured by participation in the school lunch program) of SAGE participants related to individual achievement gains in grade three?
3. Is the type of SAGE classroom configuration related to classroom achievement gains in grade three?

A description of the analytical method and a summary of the results of these analyses are presented below for each question.

#### Years of Participation

The relationship between the number of years of participation in the SAGE program and academic achievement gains was examined at the individual student level. For grade three, the scores from spring testing served as the variable of interest. SES (as measured by school lunch participation), attendance and number of years of SAGE participation were all used to predict the second to third-grade test score gain. This latter variable is the factor of interest. Table 27 shows the number of cases analyzed at each grade level by the number of years of SAGE participation.

**Table 27.** Number of SAGE Participants by Grade Level and Years of Participation, 2000-01

Years Participation	2000-01 Grade Three
One	226
Two	149
Three	154
Four	854
Total	1397

\*Participants of one year's duration could not be analyzed due to lack of a pre-test

The results of this analysis showed no statistically significant relationships between years of program experience and achievement gain in any of the content areas when attendance and SES were controlled. All results were in the expected positive direction, but none was statistically significant.

### Socio-Economic Status

The relationship between socio-economic status (as measured by the lunch participation variable) and academic achievement gains was examined at the individual student level at each grade. Regression analyses were done for each CTBS sub-test and the total score in order to address this question. Third grade scores served as the dependent variables. The independent variables included the previous grade post-test, individual attendance, and SES (as measured by school lunch participation). This latter variable is the factor of interest.

The results of these analyses are summarized in Table 28, which shows where significant relationships were found for each CTBS test and grade level. In all cases, the results show a negative relationship indicating that those with a lower SES index (higher actual SES) outperformed those with a higher SES index (lower actual SES).

**Table 28.** Significant Relationships for CTBS and SES by Grade Level, SAGE Students, 2000-01

CTBS Subtest	2000-01 Grade Three
Reading	*
Language	*
Mathematics	*
Total	*

### Type of Classroom

The implementation of the SAGE reduced class size feature has taken a number of forms. However, there are primarily two configurations: "true" 15:1 ratio classrooms where an individual teacher has 15 or fewer students and 30:2 ratio classrooms where two (or more) teachers have been given responsibility for more than 15 students. As in the past, it was of interest to determine if there are any achievement advantages associated with either of these basic configurations. These analyses were done at the classroom level with average post-test performance serving as the dependent variable in each case. Independent variables included the appropriate average pretest score and a dichotomous variable indicating classroom type. There were 71 third-grade SAGE classroom with a 15:1 ratio, and there were 10 third-grade SAGE classrooms with a 30:2 ratio. In these cases, the 15:1 ratio classrooms outperformed the 30:2 ratio classrooms on only the Language score.

## ANALYSES OF SAGE CLASSROOMS AND SCHOOLS 2000-2001

### 2000-2001 Classroom Events Study

The present study of classroom events is an extension of the 1999-2000 SAGE evaluation which compared the teaching of more effective reduced class size teachers with the teaching of less effective reduced class size teachers. In the 1999-2000 study, a set of teacher behaviors that was associated with higher-achieving classrooms at the first-grade level was identified. These behaviors, as has been discussed, include having balanced goals but emphasizing important knowledge and skills, using explicit teaching methods, providing a structured classroom environment, and carefully organizing and sequencing lessons. The use of these behaviors resulted in more teaching of basic learnings tailored to the needs of individual students. Recurring cycles of various forms of student articulation and teacher critique dominated the classrooms of the more effective teachers.

Less effective teachers, in contrast, emphasized a different set of behaviors. They stressed more personal learning goals, used indirect teaching methods, had more permissive management styles, and structured lessons in a more random way. Consequently, the use of these behaviors resulted in less teaching of basic learnings and less attention to helping individual students.

The 2000-2001 study sought to clarify and extend these first-grade findings by examining the teaching behavior of more effective and less effective second- and third-grade teachers.

#### Design of Study

##### Procedures

Subjects. The teachers for this study were second-grade teachers or teacher teams and third-grade teachers or teacher teams who had participated in SAGE for a minimum of two years. Using regression residuals, teachers or teacher teams who had comparatively higher than expected student achievement gain scores for each of the two years, and teachers or teacher teams who had comparatively lower than the expected student achievement gain scores for each of the two years were identified. Based on geographic accessibility, eight higher-achieving teachers or teacher teams (five in second grade and three in third grade) and five lower-achieving teachers or teacher teams (two in second grade and three in third grade) were selected for qualitative study. The residuals for the higher group averaged 19.9 and those for the lower group averaged -12.1.

Different types of classrooms were represented in the two groups. Of the eight higher-achieving classrooms, five were 15:1 student-teacher ratio classrooms, one was a 30:2 student-teacher ratio team-taught classroom, and two were semi team-taught classrooms in which the teacher had a 15:1 student-teacher ratio shared-space classroom but at times team taught with the shared-space teacher. Of the five lower-achieving classrooms, one was a 15:1 student-teacher ratio classroom, three were 15:1 student-teacher ratio shared-space classrooms, and one was a 30:2 student-teacher ratio team-taught classroom. In terms of other descriptors, all of the teachers were women, 70 percent of the higher group and 33 percent of the lower group had master's degrees, and the average years of teaching experience was 20 years for the higher group and 12 years for the lower group.

Data were collected from the 13 teachers or teacher teams over a six-month period by a team of three researchers. A teacher self-report was completed, teachers were interviewed, and classroom observations were conducted.

Teacher self-report. In the self-report teachers were asked to complete requested information about themselves and their classes (Appendix A). Information about class enrollment, class composition, teacher training, teacher experience, and quantity and type of instructional assistance available was collected. The self-reports served as background for the interviews and observations to follow.

Teacher interviews. Two formal interviews were conducted with each teacher or teacher team, one prior to observing in classrooms and one after several observations had been made. The first interview (Appendix B) focused on goals and preferred teaching style. The questions were both open-ended and semi-structured. The semi-structured questions were based on data obtained from the study of effective reduced class size teaching at the first-grade level. The second interview (Appendix C) dealt with mathematics and reading teaching, student and classroom management, and individualization. Again, questions were open-ended and semi-structured with the semi-structured questions based on findings from the first-grade study. All of the interviews were tape recorded and transcribed. Interviews lasted from 30 minutes to 45 minutes. In addition to these formal interviews, informal interviews were often held before or after observations.

Observations. Two reading observations and two mathematics observations were made in each classroom. The observations guides (Appendix D) directed observers to attend to the types of teaching uncovered in the first-grade study, but the guide was used flexibly so that other forms of teaching could also be captured. Observations were made of complete lessons, field notes were recorded, and expanded accounts of the observed classroom events were prepared.

#### Format for Results

The results are presented in the form of case study sketches of each of the higher-achieving teachers and each of the lower-achieving teachers. The case studies provide background information about the teacher and general class characteristics. Findings regarding classroom events are organized into three categories: (1) Instructional Orientation (goals and methods), (2) Classroom Management (Students and Lessons), and (3) Individualization. In the case study findings, references to Set 1 and Set 2 are made. For descriptions of Set 1 and Set 2, see the interview guides in Appendices B and C. The case studies are followed by a synthesis of more effective and less effective reduced class size teaching. A revised model of effective reduced class size teaching (Figure 1) and a revised general model of reduced class size teaching (Figure 2) are presented in conclusion.

### **Case Studies of Teachers in Higher-Achieving Classrooms (H1 – H8)**

#### **TEACHER H1**

##### Background

Teacher H1 has 29 years of teaching experience and holds elementary certification for grades 1-6 and Learning Disabilities Certification for grades K-9. She has taught grade levels 2-5 and has been teaching in second grade for eight years.

H1 teaches in a 15:1 type classroom and currently has 17 students assigned to her. Four of the 17 students are special needs students. It should be noted that students at this school are ability grouped for reading and mathematics instruction. For math, she teaches Group 3 out of five groups with Group 6 being the pull out EEN group. She has 15 students for math, and a teacher aide who assists with instruction 5 times a week for 50 minutes each time. For reading, she has the top group of students. Also fifth-grade students are “Book Buddies” of the second graders and visit the classroom once a week for 30 minutes. Another reading volunteer visits the classroom once a week for one hour.

##### Instructional Orientation

The teacher sets high academic goals for her students. Students are expected to become independent learners, expand their learning to outside-of-school situations, and be good thinkers with higher order thinking skills that require analysis and synthesis of information. She wants her students to become “thinkers” who do not expect to have information spoon-fed and do not expect to find all answers right in front of them on paper. Although she has a lower math group this year, she also expects these students to become good thinkers who can put what they know into practice in different situations.

##### Goals.

The teacher stressed that it is very important for her to have students become good problem solvers in mathematics meaning that being able to solve basic facts is crucial but not sufficient. Students also need to explain processes used in solving problems. She wants students to get excited about reading, and stresses that comprehension and decoding go hand in hand for students to reach that goal. Classroom observations showed that goals related to basic skills, foundational knowledge, academics, and facts and concepts (Set 1) are emphasized in instructional routines and balanced with goals related to personal development, critical thinking, decision making, problem solving, and self-control (Set 2). The teacher inferred that in order to do problem solving or critical thinking, you have to have foundational knowledge of some sort. She commented that *“You’ve got to have the building blocks in order to build a house, so we’ve got to have our basic foundation of knowledge before we can, you know, before we can go on and build from that.”*

## Methods.

Classroom observations showed that instruction was predominantly teacher directed; however, the teacher encouraged freedom and variety in student articulation. It was evident that explicit teaching, modeling, and extensive practicing of skills were important and regular components of all lessons. Instructional methods included frequent checking for understanding both informally and formally. The teacher used white boards that students write answers on and then hold up so she could instantly and visually check each student's understanding. Students also completed written assignments in class that were evaluated by the teacher.

The teacher stated that she likes to use lists and graphic organizers extensively to provide structure for kids because many do not experience structure at home. Classroom observations showed that the teacher regularly employed a wide variety of teaching methods. She said that *"I task analyze as I'm going and if there, if they don't understand it, I know right then and I can*

*back up a couple steps and come in from another door and do it a different way."* About her math group she said that *"they need a lot more than one time of having something. So I do a lot supplementing ... and being an old dog like I am ...my pockets are deep so I have a lot of sources to go to."*

Furthermore, the teacher stated that she likes to use multi-sensory approaches and hands-on activities. She commented that *"I'm a hands-on person, ...I love to make experiences and hooks for kids to hook into."* Hands-on activities were purposefully linked to the required curriculum. For example, hands-on meant having kids squeeze lemon juice from a real lemon to make lemonade and then use this experience as a foundation for writing an informational paragraph on how to make lemonade. The teacher put the use of hands-on activities into perspective:

*I have been known to be called Sergeant ... I like hands-on, but I'm also very structured. I'm a sequential teacher ...we do this [hands-on], but in my mind, I have to have, I know where I'm going, but I need to know the steps of how I'm getting there and I think kids need to know that too.*

What seems most outstanding about this teacher is her enthusiasm for teaching, the joy she gets from seeing students excited about reading chapter books for the first time, an excitement about learning that carries over to the students, and the ever-abundant praise for even the smallest accomplishments. She is a teacher who is not afraid to get down and dirty with her students. She said that *"I wish I had a skate board I could put my knees on ... my knees are always dirty because I'm walking up and down the aisles on my knees."*

## Classroom Management

Student management. Good behavior is the expected norm in this classroom, and students are expected to help each other out. A structure for student management has been in place from day one of the school year. As indicated in classroom observations, daily routines were well-established and followed. There was little need for redirecting. She did not dwell on minor infractions during instruction. No instances of disciplinary issues requiring office referral or parental contact were observed.

The teacher's style of student management was firm and decisive but fair and respectful toward students. She used a flip card system to monitor behavior and money coupons as a reward system. The teacher stated that she leans more toward teacher-directed student management (Set 1) than student self-management (Set 2). She said *"I've always characterized myself as a fair, yet firm disciplinarian, I think, and you also have to be consistent."*

Lesson management. Reading/language arts was scheduled daily in the morning and math after lunch. Lessons were organized and preplanned and had clear goals. Objectives were grounded in the curriculum for the grade level, the subject, and the level of the group and explained to the students. Student needs were considered in the planning of lessons. For example, the teacher stated that students in her math group seemed to learn better by beginning with experiential learning and then moving on to the book. She made accommodations for this in her lesson plans.

The teacher described herself as moving between Set 1 (specific goal focused, brisk pace, planned in detail, organized and sequenced, linear) and Set 2 (planned in general, spontaneous, creative, divergent, interest driven) for lesson management but depends on Set 1 being in place.

The teacher considered good organization an essential component of good teaching:

*I'm very organized and ... if you're not organized, kids can sense it right away and you've lost them .... I have to have my materials. I know where I'm going. I know how I'm going to get there, and I have everything ready for them because if you're wandering or searching for things, you've lost them.*

Observations showed that lessons had a logical sequence, brisk pace, and strategies and activities varied and built on prior knowledge:

*...you start out the class with a problem that reviews what you are either on or what you have done before just to keep it fresh in the memory and then, umm, there is always re-teaching and there is enrichment parts to it too."*

For a story about sharks, the teacher began with a drawing of a shark on the board. She asked students to name facts that they already knew about sharks. Students volunteered seven items and were encouraged to give longer, detailed answers. The teacher recorded the answers in complete sentences on the board. Next she proceeded in the same manner for things the student wanted to know or were curious about. She ended with a review of all the items on the board before going on to another activity.

#### Individualization

As indicated by observations, the teacher knew students well in general and their academic strengths and weaknesses. She also used frequent and varied strategies to assess students' progress. In particular, she liked the use of white boards because it allowed her almost instant checking for understanding. Both knowledge of students' academic progress and frequent assessment of learning were integral components for adapting lessons to students' needs.

The teacher noted that the reduced class size had afforded her to integrate numerous strategies in her daily lessons. She has more time for practice, modeling, checking for understanding, and instant re-teaching. Student articulation has increased and includes interactive discussions and one-on-one conferencing. She can take time to encourage and build the self-esteem of less outgoing students so they become more active participants in class.

Classroom observations showed that the teacher embraced the opportunities for individualized instruction offered by a reduced class size. "You can get to them," she said. Even with the top second-grade reading group, she still differentiated within this group by selecting books with different reading levels.

## **TEACHER H2**

### Background

Teacher H2 has a Bachelor of Science in Education and a Master's Degree plus 30 additional credits. She has 21 year of teaching experience, 18 years at this school and 12 of the 18 years in second grade.

H2 teaches in a 15:1 type classroom. Sixteen students are assigned to her class this year. Of the 16 students, five are students with special needs. H2 has no classroom aides. It should be noted that students at this school are ability grouped for reading and mathematics instruction. This year the teacher has the low math group which is one level above the pull out special needs group and the second highest reading group of second-grade students.

### Instructional Orientation

The teacher sends a firm message to her students that they will increase their learning. She always hurries students into her classroom when they are switching groups. It is apparent that students have grasped how important every minute of instructional time is to their teacher. While cognizant of students' often less than ideal home life, the teacher, in her classroom, channels all energy toward academic learning. She has created an atmosphere that important learning is taking place in her classroom, and students have embraced this ambience.

H2 stated that she became a teacher because she wanted every child to feel good about himself or herself. Her thinking shifted with experience, "As I grew in my teaching, the academics became a little more important. As you get into [teaching], then you start to realize, oh, you need to know this."

### Goals.

It is important to the teacher that instructional goals are grounded in the second-grade curriculum. She also checks that objectives cover and meet state standards. Classroom observations showed that goals related to basic skills, foundational knowledge, academics, and facts and concepts (Set 1) were emphasized in instructional routines but balanced with goals related to personal development, critical thinking, decision making, problem solving, and self-control (Set 2). She also considered the ability level of her group when setting goals. *"I have the low math this year. So basically, I really want them to be able to come out of my room being able to add and subtract two-and three-digit numbers. Um, the money and the clocks, the telling time, I know, we'll struggle through it."*

### Methods.

Instruction was predominantly teacher directed but freedom and variety in student responses were strongly encouraged. Explicit teaching was a dominant feature of lessons in both reading and mathematics. The teacher used extensive modeling and practicing. It was common for her to say *"I'm going to model what I want you to do. I'm going to show you step by step."* Classroom observations showed that the teacher routinely used a variety of teaching strategies successively and concurrently in one lesson.

The teacher indicated that she has established routines that work well with her students. For math she often set up game scenarios for groups of students, which allowed her to have students working concurrently at different levels while keeping the whole class motivated and on task and finding time to check individual student's progress. For reading, the teacher described the typical sequence of instruction for a new story:

I always introduce the story and we talk about what we know. And then we go to the vocabulary. And from there then, I read them the story so that they can hear it through once. We talk about it and discuss it. From that time on, they read it with partners; they read it to me, one-on-one. I don't do a lot of group reading .... And um, we build on that, the practicing. I make them read it every day. I do stress understanding. They've learned that if they can't tell me what the story is about, they haven't read it, they do need to understand what they're reading. So I probably stress comprehension over decoding. I think the decoding comes with the vocabulary.

Common characteristics of the lessons observed were that presenting and modeling was generally done in total class and would, on average, take up one third of the instructional time. Practicing, critiquing, challenging, helping, and re-teaching occurred in total class but took place mostly one-on-one and occupied approximately two thirds of the instructional time.

### Classroom Management

Student management. The teacher pointed out the advantages of a reduced size class for student management:

You spend less time diffusing problems; you spend less time policing. When you have fewer kids, it's easier to use humor ...with the smaller numbers, it just seems like you're able to get right into your, you're able to get into the learning faster, you got a real good handle on whose doing what and they're with you. And I think having fewer kids, it's easier for the students too because there is less of a distraction.

*Classroom observations showed that student management was consistent and firm but fair. The teacher was respectful and polite toward students, and students, in turn, treated each other in the same manner. The teacher did not dwell on infractions and corrected misbehavior decisively and promptly without letting it interfere with the progress of the lesson. Misbehavior requiring office referral or parental contact was not observed. The teacher summarized her philosophy about student management:*

First of all, they need to know that they are respected by you and that you care about them. That is first and foremost. If you don't respect your students, and if you don't care about them, they don't care what you have to teach them. They don't care what you know. They don't care whether they do a good job. But if they know that you care about them, they're going to try harder, and they're going to work harder. And if you make – some of the kids it's just really hard to stay on task .... Um, like I said before, I'm pretty structured. You need to be in your place, you need to be doing what you're supposed to do. I tend to keep kids who get off task, I keep them closer to me where I don't have to say their name. I can go stand next to them. I can touch them. I can touch their shoulder, whatever, or, you know. I try to do that in a respectful way to get their attention back or something.

*The teacher also used coupons to encourage and reward good behavior. Praise was abundant in her classroom. The teacher reiterated the importance of showing and telling students at the beginning of the year the kind of behavior expected in the classroom so they are ready for learning when they enter the room. The teacher stated that teacher-directed student management was common in her classroom, but students exercised self-management in many daily routines and needs that ranged from getting out of their seats to sharpen pencils to selecting enrichment activities.*

#### Lesson management.

Daily routines are reading/language arts in the morning and mathematics after lunch. Lessons were organized and preplanned and had clear goals. Objectives were grounded in the curriculum for the grade level, the subject, and adapted to the group's level as well as individual student's level of understanding within the group. The teacher stated that she liked structure and preferred Set 1 (specific goal focused, brisk pace, planned in detail, organized and sequenced, linear) over Set 2 (planned in general, spontaneous, creative, divergent, interest driven) for lesson management

The instructional time was generally of a high academic nature with no down time for students and teacher alike. Constant active engagement was the norm for the lessons observed. Lessons had a logical sequence and a brisk pace. When a few students got behind, the teacher opted to re-teach them individually at another time rather than waiting until all students were at the same level of understanding.

What seemed most outstanding about all of the lessons observed was the high level of energy on the teacher's part and the active engagement in learning on the students' part. The amount of time and effort exerted by the teacher for individual feedback and immediate attention to students' academic needs was extraordinary.

#### Individualization

As indicated by observations, the teacher knew students well in general and each student's academic strengths and weaknesses. She also used frequent and varied strategies to assess students' progress. Assessments included formal and informal evaluation of student progress. Both knowledge of students' strengths and weaknesses and frequent assessments of students' learning were integral components for adapting lessons to students' needs.

The teacher noted that the reduced class size had afforded many opportunities to pay attention to the individual needs of students and to adapt lesson plans to their needs. She has more time for practice, modeling, checking for understanding, and targeted one-on-one re-teaching or challenging. Student articulation has increased and includes interactive discussions, one-on-one conferencing, and asking more questions. It was apparent during classroom observations that the teacher routinely integrated individualized instruction in daily lessons. During a segment of a reading lesson that dealt with vocabulary development, each student (12 students present) received individualized feedback seven times in 20 minutes of instructional time. Although students were ability-grouped for reading and math, the teacher planned for and accommodated varying levels of understanding within these groups. She put students into smaller groups and guided these groups at their appropriate levels of understanding.

### **TEACHER H3**

#### Background

Teacher H3 holds elementary Pre-K – 8 education certification with a minor in speech and a Master's degree in reading. She is currently working on an administrator's license. Her teaching experience encompasses a total of 27 years with 11 years as a Pre-K-6 Title 1 teacher, 11 years in Kindergarten, and 5 years in second grade.

H3 teaches in a 15:1 type classroom and has 17 students assigned to her. Two students are LD students. A classroom aide comes in five times a week for 60 minutes each time to work on reading skills with 6 students. It should be noted that students at this school are ability grouped for reading and mathematics instruction. For reading, she has the lowest group and for math she has the second highest group of second-grade students.

A high student mobility rate is characteristic for the school. School statistics showed that 10 weeks into the school year, 135 students had come new to the school and 120 students had left the school. The teacher stated that 86% of the students receive free or reduced lunch.

### Instructional Orientation

The teacher expects all students to make progress in their learning. It is important to the teacher to have high expectations for her students. She emphasized that she wants “*to get them [students] as far developmentally as possible ... as far as they can possibly go.*” Teaching has a spiraling effect, she pointed out, each year builds on the skills of the previous year. And so it is important that “*you come back to them [skills] in different ways .... It’s practice, repetition.*” The teacher emphasized that a reduced size class has made it possible for her to connect with her students. She can get their attention, make learning important, and make the instructional material meaningful for her students. You can spend time with a child, reach out to the child who is frustrated, and enrich for those who are ready to move on, she explained.

A high enthusiasm for teaching and learning was a distinct characteristic of this teacher. She maintained excellent personal interaction with her students and let them know that she really cared through constant praise and encouragement. All events in the classroom taken together, one would come away with a sense of pride and importance about learning.

Goals. Classroom observations showed that goals related to basic skills, foundational knowledge, academics, and facts and concepts (Set 1) were emphasized in instructional routines and balanced with goals related to personal development, critical thinking, decision making, problem solving, and self-control (Set 2). The teacher described herself as a combination of Set 1 and Set 2. It is common for students at this school to experience a lot of “unstructure” in their home lives, she explained. They do not have listening skills, they don’t know how to stay on task, or how to follow directions. So she spends time teaching the students to control their behavior and to become active learners.

The teacher stated that she discusses lesson objectives with students and reassesses them at the end of a unit. Lesson objectives were grounded in the second-grade curriculum and the state standards:

*I think part of the goals, though, and that’s one thing I do like about the standards is there are processing-type goals where they really have to have a thought process on what they are doing and not just regurgitating answers and knowledge back to you. But they are to do something with what they have learned. And to put it into some kind of process where they can transfer it from one subject to another or one situation to another.*

The teacher elaborated on specific goals for math and reading:

*Math class – Basic facts are very important, not just to regurgitate them, but to be able to understand what they are. Um, to have some good knowledge of, besides the facts, problem solving skills, the concepts.*

*Reading goals that I feel are very important – is to be able to have some skills to be able to dissect words, to be able to figure out especially for comprehension, to be able to understand and just not be able to say words, but to be able to understand what you are reading. Um, I like to have strategies for the skills in trying to figure out words if they come up against a word they don’t know. Same with strategies to figure out comprehension if they are having trouble – to know to read on or to look at the picture clue or whatever they have. Those skills, I think, are very important for kids to learn because those skills take them on, they’re not just skills for second grade, but they’re skills for all the grade levels going all the way through school.*

The teacher described part of her instruction as “frontloading.” Frontloading, she explained, is giving students foundational knowledge, filling in background knowledge children in poverty are often lacking.

### Methods.

Classroom observations showed that instruction was predominantly teacher directed; however, the teacher encouraged freedom and variety in student articulation and remained flexible in her planning. It was evident that explicit teaching, modeling, and extensive practicing of skills were important and regular components of all lessons. Instructional methods included frequent checking for understanding both informally and formally. The teacher stated that she likes to incorporate visual aides and hands-on activities which are linked to the established curriculum and evaluated:

*We have a least one day a week where it is very much hands-on, where we are taking the skill for that week and maybe some of the review skills from the week before, and we’ll be doing activities. It could be with blocks, it could be with counters, it could be with clay, and could be all kinds of different things. And then they move throughout the 50-minute period to different stations... You know, we got enough for three people to be at each station. You pick your station you are going to go to ... at the end we do a test.*

Practice and repetition are strategies the teacher liked to use among other instructional methods:

*Another technique I'm very strong about doing is the rote practice. We'll do a hundred problems and I'll give them 5 minutes and ...they are really good at that and very proud because a lot of them aren't using their fingers anymore. They're not using counters, it's connected, it clicked, it's in there."*

She likes to blend computational skills and conceptual understanding in math instruction, she explained. The teacher commented that she would like students to be thinkers and encourages them to think of as many possible ways to solve problems as they can. She is not afraid to abandon her plans when a student comes up with a better suggestion, but she also does not lose track of the lesson objectives and has no trouble reigning students back in.

### Classroom Management

#### Student management.

The teacher expected students to take responsibility for their behavior. As indicated in classroom observations, daily routines were well-established and followed. Constant praise was the norm in the classroom. *"Proximity, I think, works wonders. I try to give a lot of positives all the time. I'm not afraid to touch on the back and pat them and let them know they're doing ... a good job."* Students received rewards for good behavior. For example, when the whole class would follow directions without reminders or need for redirecting, she would put a marble in a jar. A full jar meant a popcorn party or other reward.

During the lessons observed, there was little need for redirecting. She did not dwell on minor infractions during instruction. The teacher commented that if behavior infractions were of a more serious nature, she would have *"a serious talk about it separate from the rest of the kids...."* No instances of disciplinary issues requiring an office referral or parental contact were observed.

The teacher's style of student management was firm and decisive but equitable and respectful toward students. She used a flip card system to monitor behavior and money coupons as a reward system. Classroom observations indicated that the teacher leaned more toward teacher-directed student management (Set 1) than student self-management (Set 2). The classroom atmosphere was quite relaxed, and students had a lot of freedom of movement.

#### Lesson management.

Daily routines are reading/language arts in the morning and math after lunch. Lessons were organized and preplanned and had clear goals. Objectives were grounded in the curriculum for the grade level and subject, had a logical sequence, brisk pace, and allowed for increased wait time for student responses.

The teacher described herself as moving between Set 1 (specific goal focused, brisk pace, planned in detail, organized and sequenced, linear) and Set 2 (planned in general, spontaneous, creative, divergent, interest driven) for lesson management. She stated that she knows her long range goals well and likes to have detailed lesson plans for a couple of days in place and more general plans for the rest of the week. She then modifies these plans using task analysis and student progress for input. At the beginning of the week when she is introducing something new, she likes to be more structured, she explained, like starting out with Set 1 and then moving into Set 2. She commented that *"You got to be flexible, got to have goals, got to have objectives, got to have a way that you are going."*

Classroom observations showed that the teacher often used a variety of brief activities or varied strategies within a lesson to keep students interested and focused on practice. Transitions from one activity to the other went smoothly, did not seem to break the flow of the lesson, and included physical activities at times. Generally the teacher began class with whole group instruction and then moved students into groups or worked one-on-one with students. Down time for students and teacher were not observed, and students were expected to keep up with a brisk pace.

#### Individualization

As indicated in interviews and classroom observations, the teacher knew students' background and their academic strengths and weaknesses. She also used frequent and varied strategies to assess students' progress. Both the knowledge of students' academic progress and the frequent assessment of learning were integral components for adapting lessons to students' needs.

The teacher noted that the reduced class size had afforded her to integrate individualized instruction into her daily lessons. She has more time for targeted practice and instant re-teaching. Student

articulation has increased and includes interactive discussions and one-on-one conferencing. She now has the opportunity to pay more attention to the non-talkers and students who are not so sure of themselves.

## TEACHER H4

### Background

H4 has taught for 30 years, the last 12 in second grade in her present school. She is licensed for grades 1-4 and has earned a masters degree plus 30 credits. She teaches a class of 15 in a spacious room. Her three special needs students include one who is diagnosed as language disabled, one both language disabled and emotionally disturbed, and one who receives speech and language help. Over the course of three months, two students have left and two others who are weaker in reading have joined the class.

At various times of the week, four professionals come to H4's room to assist students: (1) a reading teacher who takes five students out for about 45 minutes three times a week; (2) a special education teacher or her aide who works in the classroom with the two learning disabled students in reading for about an hour every day and in math for about 30 minutes four days a week; (3) a retired teacher who volunteers once a week with two or three students in reading. The special education aide has known many of children since kindergarten. Although she occasionally observes and talks to students, she is generally occupied with the emotionally disturbed student during reading and math.

### Instructional Orientation

The students appeared quite cooperative. However, H4 considers this group of children difficult, especially the emotionally disturbed child, whom she and the aide characterize as very volatile. H4's view is that many of her children are typically sent to school with far less parental guidance than in the past, many have severe problems in the home, and they often lack sleep. At their desks, several students stretched or contorted themselves restlessly at times; some made occasional unsolicited remarks. H4's affect was rather dispassionate. Although the lessons observed had some humorous content, she consistently responded to students' words and actions with seriousness rather than humor.

### Goals.

H4 wants her students to make at least a year of growth, to be able to attack words independently, read at least on grade level, know their math facts, and solve math problems independently. She says she works not simply for coverage of content but for in-depth understanding in all subjects. She says she begins the year working on basic academic goals but focuses increasingly on goals related to personal development:

*Set 2 for my main list. But... I'm a big one still for basic skills.... Without the basic skills, it's pretty hard to do [Set 2]. You have to start with a real basic set of skills and...foundational knowledge.... But we want to move into this area of critical thinking, decision making, problem solving...more and more.... Of course self-control, we're working on that all the time.*

### Methods.

H4 characterized her teaching style as mainly direct instruction. During observations, she taught the class primarily as a whole group. Partner work sometimes followed for practicing what was taught. H4 expressed a preference for working in small groups and partnered pairs. She said:

*Basically Set 1...with some of Set 2 in there.... I do not let my students direct and control... We have to provide the curriculum. They can't select.... In second grade I don't think you have too many that could handle the independent learning.*

H4 feels that the school's change to a more difficult reading series for lower readers has been beneficial because higher-level thinking is stressed: comparing, contrasting, predicting. Still, she says her emphasis is on phonics and decoding, *"If they can't decode, how can they ever comprehend!"*

During periods designated as reading class, much time was devoted to language development and spelling, such as recognizing words that indicate sequence and learning to apply phonics rules when adding endings to base words.

A new story was begun with a very brief silent "picture walk." H4 asked them to come up with a question about the title, suggesting that it begin with "where" or "what." She then gave information about

the characters and setting and showed the location on a map. A student read the first page (four lines) aloud, and a second student repeated them. H4 interpreted the segment and said, "Let's see *what she does next*." A child read the next several lines aloud, and ten minutes of silent reading followed. She reminded them, "When you've finished...don't say, 'I'm done.' Nobody's ever done in here. You practice it!" She circulated, listening to individuals reading aloud to her for half a minute to a minute each.

On another occasion the students were paired for reading. She explained:

*I can pair [lower readers] up with someone who can read and can read it to them or read it with them. I'll have them read it at the same time so...the voice of the other child at least kind of pulls them along.*

During paired reading, the room sounded like a babbling brook with an occasional bird or frog. H4 said that since being in a SAGE class, she has allowed more partner work and more talk between partners. The small class size also encouraged her to give individualized homework:

*I send home books to be read every night. That's one thing I never did with a larger group, because it was not manageable for my time.... Extra books, older books, sometimes library books...and I will assign pages for each student to read. And their parents have to sign.*

H4 said that her emphasis in math is on concepts and problem solving rather than computation. She supplements the textbook with worksheets and materials she has made. She adds problem solving and timed tests on the facts. "Getting ready for the [standardized test] I did more skipping around than usual," she said. In math lessons, she was careful to explain new terms. Manipulatives such as coins were used only after more abstract exercises, so that the novelty of the materials would not overshadow the lesson.

## Classroom Management

### Student management.

H4 is the one who decides what to do and how to do it. "The teacher has to be in charge [as in Set 1] and I think the students have to know that," she said. Students were generally attentive to presentations but sometimes less so when the class was reading together or when a classmate was answering. When she allowed students to work together, H4 was alert that they not roam. Usually her corrections of individual students' behaviors were hardly noticeable. Sometimes she made a general call, "Oh, I hear talking, or O.K., we have to stop and wait for everybody's attention," or to the child who had the floor, "People on this side were quiet for you." She complimented students when they correctly anticipated her instructions. But she admonished them for anticipating incorrectly (e.g., taking out their books when she didn't intend to use them). She ignored a child's interesting but unsolicited remarks during a lesson, apparently to reinforce the importance of proper behavior in class.

Extrinsic rewards were not apparent. The children's incentives to do good work appeared to include being called to work at the board (e.g., *We'll call the quiet people, who haven't had a turn.*) and getting to the part of the lesson that included manipulatives, cutting and pasting, or coloring.

### Lesson management.

H4's observed instruction in math and language followed an orderly process. To delineate the lesson's purpose and later to initiate its practice time, she stated, "We're going to..." She reminded the class what was previously covered and asked review questions, presented the new concept, and employed several students to help demonstrate it at the board. She gave another example or two and called on students to answer, demonstrated the sequence for proceeding on their own, asked students to repeat the steps, distributed the needed materials (often herself, rather than let students do it), and walked around checking on students as they worked. As soon as the work was collected, she clapped a pattern, which the class echoed, followed by several more claps and echoes. Then, on to another lesson. Transitions were quite rapid.

H4 seemed to work diligently at carrying out what she had prepared. In theory and practice she supports specific goals and organized lessons:

*I try basically to follow the Madeline Hunter design: instruction and checking for understanding, instruction, more checking, and guided practice....I am planned but not in excruciating detail. I still leave room for being spontaneous, creative, and divergent [Set 2] when the interest arises with the kids.*

Divergence was not obvious. Her presentations were predominantly deductive and her expectations during guided practice quite precise. (E.g., *If you didn't write it this way, do it.*) Her questions were clearly meant to lead the class to the answers she wanted. When one child gave a prediction that was incorrect but plausible, she did not explore his reasoning but said *No* and gave the correct answer herself. She admonished students not to go ahead, *"I know some of you think you can work ahead. Not today."*

#### Individualization

H4 seemed careful to call on all students to answer or take part in front of the others, and during seatwork she circulated to most of them. Her stance and tone of voice were relatively formal. Working at an individual's desk, she generally placed herself at or behind the child's shoulder, standing straight or leaning down with hands at her sides or behind her back. She said:

*I'm able to sit down like this with them and go over their writing, critique it with them, and give them suggestions individually, whereas before, with a large class, I would correct the paper by myself and then pass it back.... They're not just getting a paper back with red marks on it. 'Oh. What does she mean by this?'... And even for corrections on anything, like on a math page.... As far as giving out an assignment and then seeing where a child is having difficulty with it, they might have to go to the board...while I stand there and help them step by step.*

### **TEACHER TEAM H5A and H5B**

#### Background

H5A has earned 32 credits past her bachelor's degree and has 15 years of teaching experience, all in second grade at this school. H5B has earned a "master equivalency" plus 32 credits and has 28 years of teaching experience, nearly all at this school, including seven years in second grade and many years in special education. H5A and H5B teach as a team in a classroom of 32 students, which includes seven children with special needs--three autistic, one cognitively disabled, one hearing disabled, one visually disabled, and one who goes to speech resource. An aide, present approximately two hours each day, works closely with the special needs children. The teachers acknowledge that her presence is extremely helpful. Formal instruction with basal reading texts occurs twice each day--once when the entire class reads the same story, a story at second grade reading level, and once when three small groups read at their determined levels and a fourth goes to a Writing to Read classroom. Math is taught on a whole-class basis.

#### Instructional Orientation

##### Goals.

The teachers agree that basic skills (Set 1) should be developed through critical thinking, decision making, problem solving, and self control (Set 2). They say that although their primary goal is academics, socialization is very important. They want the special education children to attain their IEP goals. Integration of those students with the others is seen as a goal that involves both academics and socialization. The teachers said that students are encouraged to help each other. Observations confirmed instances of students assisting and correcting each other, without evidence of competition. One teacher remarked, *"[they] fight over helping the ex[ceptional] ed child."* She noted that, by the same token, the integration is so effective that not all students are aware that there are any special education children in the room. H5A and H5B attribute their success in teaching social and emotional skills to H5B's special education background. H5B noted, *"If the adults like those [special education] kids, the other kids will like them."* The teachers feel strongly that goals are dictated by class composition as well as class size.

##### Methods.

H5A said, *"I prefer to do hands-on teaching, where the teacher is in front of the classroom conducting the lessons, rather than giving them worksheets to work on."* Classroom observations confirmed that instruction is predominantly teacher-directed. Students were working on things they were

told to do, not devising their own activities. But different answers and different ways of finding the answers were encouraged.

For math, they divide the year into five segments, each covering a major topic. Topics that warrant less time are touched briefly on a daily basis. H5A said:

*We have five different areas that we emphasize during those five divisions of time, such as addition/subtraction...for one segment.... Topics that we feel we don't need to spend...one fifth of the year on, such as measurement, fractions...[we've] done them every day for five minutes.... [For example] I tell them to take out a ruler and draw me a five-inch line. That's it, that's measurement for that day.*

Math is spiced with a routine of diverse auditory, visual, and kinesthetic activities such as number and counting games, rhythmic songs, movement, and sign language, often in rapid transition. Some math concepts are developed through daily observations, such as of the calendar and the weather, with students keeping records of them in teacher-developed booklets. In one lesson, for example, H5B asked, "How many degrees colder [is] today than yesterday?... How did you get from 38 to 34?... Find the warmest temperature of the month." Various displays and pocket charts on the walls are actively utilized. The teachers present many ways of visualizing numbers, addition, and subtraction and often elicit students' own ways of constructing solutions to questions and problems. Students are invited to come to the board to explain their methods. A weekly student captain gets numerous leadership opportunities, assisting at the front in whole-group lessons. When students made errors or did not understand, the teachers asked them questions to learn the root of the error (e.g., *What was your clue?*) and suggested the next step or that they re-check their work.

The teachers believe that in addition to students reading at their "instructional" level, exposure to print at their grade level is crucial. H5A said:

*We all read at the second-grade level. I don't care if you cannot read at the second-grade level. You are in a whole group with a second-grade book, and you will be exposed to that second-grade print. [But] nobody's going to be singled out to do it by themselves.... Even the lowest ex ed kid who cannot tell you an "a" from a "b" should be exposed to that book, and they learn to read along.*

H5A said that in reading, comprehension and interest are stressed more than decoding skill or vocabulary. Yet, the "word wall" is systematically utilized to teach sight words, and the teachers were observed asking questions to help students draw meanings from context. Oral questioning tended to include aspects of the stories that interested the students. Two basal series are employed, one that emphasizes high interest and colorful illustrations and one with a more controlled vocabulary. In reading groups, the teachers provide two or more opportunities to read each segment of text--silently as the teacher reads aloud, silently without the teacher, together aloud with the teacher, and individually. Seatwork often includes listing a story's characters, setting, problems, and solutions. H5A noted, "*We do put more emphasis on the children who are below level.*" Students were sufficiently engaged to ask their own questions during the reading.

## Classroom Management

### Student management.

During observations, students were generally very well-behaved and on task. Supervision by the teachers and aide was constant. The aide defused potentially disruptive situations with the special education students. The teachers engaged in very little criticism or reprimand. Admonishments--even glares--seemed to be given with a sense of humor. Compliments seemed genuine. Competition is not invoked among students but rather toward other classes. Extrinsic rewards were not apparent. Students seem to focus on getting their work right and seeing that their classmates do, too. The teachers appear to hold to their aim of not causing children to stop learning because of feeling threatened. The atmosphere seems happy.

Mornings are characterized as being more teacher directed (Set 1). Afternoons are more self-managed (Set 2) when, according to H5A:

*In math they do a lot of self-exploration with things and experimentation with the new form of math that we're doing [in the district].... Except on Friday afternoons for a half an hour, we'll never come in and say, 'This is math time. Please come in and find something to do with math and entertain yourself.'*

### Lesson management.

H5A considers her lesson management spontaneous, interest-driven, and planned in general (Set 2) but with a specific goal in mind (Set 1) rather than *“go[ing] off in a bazillion different directions.”* According to H5A, although the activities vary, the basic sequence is to review yesterday’s work, introduce the new idea, and practice it. The students seem to know what to expect and generally to enjoy it. The pace of observed lessons, especially those led by H5B, ranged from a canter to a gallop. Transitions were rapid, and students seemed to experience very little waste of time. Only when students were chosen to show their work at the board did it appear that some at their seats were not engaged.

H5A is aware of and characterized the causes of unsuccessful lessons, *“wrong time of day (they’re tired), wrong attitude (if I’m upset because I had a bad morning)...going too fast...assuming that they know something that they don’t know, not being sure that you review.”*

### Individualization

The teachers are pleased to be working as a team because despite the size of the class one of them is always available to individualize. While one instructs, she, her partner, and the aide each takes responsibility for checking and working with two of the six rows of children. H5A said, *“They’re getting their more individual instruction. But they’re not being separated from the group to do it.”* Students are pulled aside or outside the room more often during periods of seatwork than during whole group instruction. H5A feels that while feedback should not be presented harshly, it must be honest to be helpful. *“I think that’s what the teacher’s there for,”* she said. *“I think you have to lead them.”*

## **TEACHER H6**

### Background

Teacher H6 shares a room with a first year teacher, P1. They began the year with a divider but had taken it down by Christmas. Each teacher is responsible for 15 students. H6 has taught for 11 years, eight years in the second grade and three years in third. She has a master’s degree in administration plus a number of in-service and workshop credits. She has three special needs students among her 15, one is CD and two are LD. Eight of her students have not always been in SAGE classrooms, 4 were in first grade only and 4 were in second grade only. H6 has one assistant who helps with six students five times a week for 30 minutes.

### Instructional Orientation

#### Goals.

Teacher H6 sets very high academic goals for her students, balancing the basics with critical thinking. Her high standards and expectations are based on what the students will have to know to be successful in the world. *“Kids need to be able to fill out a job application, need to be able to read simple direction, you know, fill out in the black pen, not pencil. First name last, last name first.”* She goes on to say that reading is the most important skill her students have to learn. *“Because reading is the basis for everything else.”*

H6 emphasizes that overall school is all very serious business. *“They’re doing their job; they’re getting an education.”* And H6 insists they do that job well. Twice in her interviews she stressed the importance of students always trying. *“They are not allowed to say, ‘I can’t,’ because that word should not be in their vocabulary.”*

Her goals for reading and math are the same in that she wants students to meet the benchmarks, to do well in the tests they are required to take: *“There are performance checklists that we have to fill out. And there are specific goals we have to be at in math, reading, social studies and science because that’s what they look at.”*

Her goal is to maintain a balance in instructional methodology so that students learn the basics but not without plenty of critical thinking. She refers to critical thinking emphatically. *“And it’s not worksheets. We do not do worksheets in here. We give them the assignment and they have to demonstrate to us that they can do the assignment.”* For example, she has her students do a lot of writing. *“We’ve done things like, if you were the author, how would you change the ending? If you didn’t like the story, how would you change it? If you were one of the main characters, how would you solve the problems?”*

### Methods.

H6 is always open and flexible, ready to meet the students' needs by using a variety of materials: I know not all kids are going to learn just by reading. They're going to have to touch it and smell it and do it, as opposed to just trying to absorb it into their brain. I try to be very open-minded about the things kids would want to do.

She relates that she and P1 bounce ideas off each other, *"Do you think this works? Do you think that will work? That's a plus because you always have constant feedback, not just from the kids but from the person you're working with."*

H6 is quick to supplement the school's reading and math programs so that her students meet the benchmarks. She supplements the school's reading program with trade books, oftentimes moving quickly beyond the prescribed series. This year her class finished the reading book in January, *"We zipped right through it real quick."* Some years the class is able to do three or four additional books, other years as many as ten.

H6 finds it necessary to do considerable supplementing with the school's math series. She summarizes saying that P1 spends about an hour a day on the math series and she spends 25-45 minutes on the supplementary work that is necessary for students to learn the basics.

Observations revealed that H6 is remarkably effective in her methodology. For example, in doing an "Adjectives" assignment, she explained how she modeled the lesson.

*How I explained it to them is I gave my example of pizza as my favorite food. And I used as many adjectives and adverbs as I could. And I modeled it for them; I wrote it on the board. [P1] described what eating a steak is like for him. And so then it, a light bulb finally clicked. And it's like, "Oh, yeah!" And we were telling them we wanted at least six sentences in a paragraph. We had some kids that wrote a whole page. So, again, it depends on the assignment. But we'll model and then they have to give it back.*

As a result, the students in her class are generally intensely interested in their lessons:

*Last week we were still counting with the calculator to 300. We had done a whole page out of the math book of the activity. They wanted me to think of something else to do with that because they wanted to keep doing it. They really got into it...If it's something they're into and they want to keep exploring it, they keep going.*

H6 frequently checks student progress, both formally and informally. She insists on frequent reviews and she tests students often in both reading and math. She is always aware of students' levels of progress. Much of her awareness came from her style of teaching which included constant interaction with the students:

You guys, I'm proud that you know this but we've got to give some other kids a chance. Brian, 432 is between what two numbers? Is 32 more than 50 or less? O.K. Mikey 864 is between what two numbers? Is 64 more than 50 or less than 50? TT, you're next. What two numbers is 650 between? Actually 700. Good girl.

On another occasion, H6 is teaching long division and again she hurriedly puts students through their paces, all the time checking to see what they know. *"Brian, do the long division, 4 into 4, multiply, bring down the 8, 4 goes into 8, then prove the answer by multiplying 12x4."* Then she says three times, *"I'm going to mess you up."* She says, *"Does 9 go into 38? Even or odd?"* One boy jumps out of his seat to the board, *"I know, I know."* H6 laughs real hard, bangs him on the head affectionately, then leans her arm on his head while she continues the problem. *"A number that gets you close without going over?"* Markie is jumping up and down, out of his seat with his hand waving in the air. *"I know, I know, I know."* H6 laughs, *"I know you know. You're out of here. Out. How are the rest of you going to do your homework tonight if you can't do this? You know that test [P1] and I've been preparing you for? This is going to be on it. You're going to feel pretty stupid if you can't do this. Okay, let's keep going. Don't anybody tell Gregg how to do this."*

## Classroom Management

### Student management.

As was illustrated in the previous paragraph, H6 is affectionate with her students and gives them some independence. Referring to sets one and two on the interview form, H6 says she sees Set 1 as more of a dictatorship. "*The kids as a whole have not made P1 and I do anything like that. We try very hard to make this room, to some degree, democratic.*" H6 mentions democracy a lot when she talks about her relationship with her class. Several times during each observation, she would ask her class to make a decision.

### Lesson management.

H6's lessons are always fast paced and always fun. The interviewer asked H6 if she could be described as a teacher who didn't miss a beat. She laughed, "*We can't. We've got to keep up with the kids.*" During one observation, H6 was teaching the two classes together and her pace was very quick:

*It starts with an E? No, I said N. Good job, Ryan. They're trying to trick you. It's on the board. Ebony, what's the next one. Starts with R. Right, rude. How do you spell it? Nope, no O. I'm going to give the next one to Mikey; he's being too quiet over there. Look at it Michael. (H6 stamps her foot and hollers) That's not it, noooo. (Everyone laughs) You could say that, but what's another word for it? Starts with B. Excellent.*

Because of the pace, a lot of learning takes place in relatively short time periods. One observation lasted for an hour and fifteen minutes. In that time, students previewed a story and predicted its outcome. Each read a good page or two in addition to reading along with other readers. Plus all students completed two or three language worksheets.

### Individualization

The individualism in this classroom stems from teachers' attention to student differences and also from H6's overall style of teaching. One incident describes very well how these students are treated as individuals. The observer left one afternoon through the coatroom door, only to find a girl on her stomach on a mat, her head sticking out into the hall. She was doing a writing assignment and was into the second paragraph. The observer knelt down to ask who gives her permission to write in this location and in this position. When asked if she can do this anytime she wants, she looks confused. No matter how she is asked, she does not understand the question. Obviously, she does her best writing this way and the teachers happily accommodate her learning style.

## **TEACHER H7**

### Background

H7 has taught for 22 years, ten in special education and 12 at her present school in 3<sup>rd</sup> grade. She holds certification in grades K-3 and has a masters degree in instruction. In a spacious room she teaches a class of 15 students, which during part of the year has included one child diagnosed as learning disabled and emotionally disturbed. A reading teacher assists for less than one hour a week, and a special education specialist has come at various times to help with the special needs child. For reading, H7 teaches her own students. For math, her lower math students go to another teacher, and that teacher's higher ones come to H7. In order to schedule arrangements with other teachers, the reading and math periods are limited to 45-50 minutes.

### Instructional Orientation

To H7, SAGE feels like a return to teaching special education, where she became experienced at multi-age instruction and individualization in small classes. She considers immediate feedback extremely important:

*If they're working on something, especially if they're practicing a new skill, I try to give them feedback right away. And that's what I found in SAGE is real easy to do. Fifteen kids, I can get to each one.*

### Goals.

H7's goals are to help students grow academically, socially, and emotionally. As to priority, she said:

*I don't think I could put one above the others. I suppose being a teacher I have to say academic. That's what I'm here for. But I really think you're trying to develop the whole person.... Not that I disregard Set 1. But...we want to head to Set 2.*

In regard to social and emotional growth, she explained:

*I think your ability, your preparedness to learn, has a lot to do with your emotional state and your social readiness.... Our class becomes a little mini family, that we become more bonded...we're together, we're a group, and let's work this out.*

She feels it is valuable when students extend a lesson on their own time, such as by making observations outside of school or bringing a book or an article from home.

### Methods.

Addressing her style of teaching, H7 said:

*I start with explicit and move to hands on.... Start with Set 1, and when they get to a certain stage, then I move to Set 2.... We're pretty much driven by standards. There's not too much that the kids can choose from there.... I model how to problem solve, and they try the problem solving.*

It was clear that her students experience a range of presentation modes and activities. Even the lights and curtains are varied for some lessons. She explained:

*I like to try to use visual, auditory, hands-on--kind of a variety of methods. We do some cooperative learning, partner learning, also individual. I like to use all three, depending on the situation. Variety.*

In math, the class uses a considerable amount of manipulatives and learning games in addition to the textbook. The students seem to enjoy learning their multiplication facts by an unusual system of memorizing rhyming phrases. For mastering their facts, students receive a certificate and a round of applause, which were the only extrinsic rewards observed.

In reading, H7 uses the stories in the basal text and its suggested activities but has forsaken the integrated spelling and language lessons for sources she considers stronger. She explained that she often begins with a word web based on the main concepts of the story. She supplements the text with discussion and by having students complete story maps, comparisons, or summaries. She also creates short-answer questions similar to what might appear on the standardized tests and tends to avoid many of the projects--such as dioramas--that are not tied to what students will be tested on. Accurate spelling and complete sentences are not stressed in this work. She supplements further with expository materials that focus on skills such as sequencing, main ideas, and finding details. H7 mentioned that students at all levels in her class enjoy SRA cards, which they use once or twice a week.

H7 has found no need to split into leveled reading groups this year. In addition to whole-group instruction, students were observed in small cooperative groups and in pairs, reading and doing their tasks properly as H7 circulated, listened in, and asked questions. As a third-grade teacher, H7 puts her emphasis on comprehension because decoding and vocabulary have been emphasized in first and second grades. As a whole class, before reading a story, students were asked to predict and suggest possible turns of the plot and to put themselves in characters' places. Still, to sound out words, students are taught and reminded to use "chunking," a phonics strategy. She noted how the students' reading tasks evolve:

*First half of the year we do quite a bit of oral reading. We go through the story together, take turns, partner read, [and] with the tape. By [mid-February] we do a lot more independent reading, because we are getting ready for the 3<sup>rd</sup> grade reading tests.*

In both math and reading, H7 keeps her class intellectually stimulating. She is careful to check with students to see whether they understand the reasons why an answer or a concept makes sense. She anticipates and points out potential errors and reminds students of and asks them to recall strategies they have learned to solve problems. She was observed alerting them when a more challenging question was to follow, and they seemed eager to engage. Besides evaluating their work herself, H7 encourages self-evaluation and peer evaluation whenever possible.

## Classroom Management

### Student management.

H7 takes a student management approach in which she sets the agenda and the standards while at the same time staying in close touch with each child, their needs and feelings. She explained:

*Set 1...I think I am pretty structured.... There are some choices, they're teacher-directed choices. I try to be empathetic, but they know...what's expected.... You provide a lot of structure, and the kids know where they stand.... I try to use a positive approach.... I try to never put a student down. I try to be encouraging.*

As a whole class, groups, and pairs, students were observed to be almost entirely cooperative and on task and many were clearly eager to participate. The atmosphere was friendly, at times game-like. The pace of whole-class work was constant but deliberate, not rushed, with the same question often asked of more than one student to hear their approach. When called upon, children were free to reply, "I'm still thinking."

H7 keeps a smile on her face and in her voice. She believes the teacher must have everyone's attention before beginning. Nevertheless, her voice was soft throughout the observations. When a side conversation began during her presentation, she stopped mid-sentence and calmly addressed the talker, reminding him how to take part: hands quiet, look toward the speaker. When students show signs of having difficulty or being upset she subtly moves to closer proximity. She often kneels at a student's desk and talks as softly as a whisper. She may gently place her hands in front of the child, on the desk, or on a shoulder. She misses few opportunities to give a genuine compliment on work or reasoning well-done.

H7 feels her special education experience enables her to catch potential behavior problems before they get out of hand. She mentioned using eye contact, ignoring, and redirecting by finding positive things to state about problematic situations. *It's just a sense of meeting kids*, she said.

### Lesson management.

H7 characterized her lesson management as:

*Mostly Set 1 with a little bit of Set 2.... I like to do things that are creative, but they are planned.... I can be spontaneous if I need to. But most of the time [Set 1] is where we start.... Have your plan but don't be glued to it.*

Before starting a group or partner activity, she sometimes uses a "repeat after me" strategy to remind students of appropriate ways to behave. In math she generally holds to a sequence of review, new, group practice, partner practice, and summarization.

### Individualization

In reading, H7 takes opportunities to work individually with those reading above and below grade level. The lower readers re-read with her, often during their half-hour recess, or with a partner as she circulates and listens in. Sixth-grade "reading buddies" come three times a week. For students ready to move further ahead in math, H7 said she works with them on enrichment while the others practice the lesson she has taught.

H7 said she does more hands-on activities in the small-class setting than before:

*It's easier to control in the small setting.... Sometimes I'm more of a facilitator than a teacher, because it's much easier to get feedback from the kids. And when you're getting feedback at a faster rate, you can adjust your teaching more frequently and make it more adaptable to the kids' needs. So instead of, 'I'm going to teach it one way, and whoever gets it gets it,' I can adapt it for this one or this one.*

By facilitator, she means that she often uses an inductive approach:

*In a large class sometimes I don't have time to wait for them to arrive at [an] understanding.... In a small group, I can say, 'Well, here are some clues. Think about it. I'm gonna come back to you.'*

By encouraging students to explain their reasoning during whole-class lessons and by circulating and listening to students when they are in other working arrangements, H7 maintains her awareness of individual differences and deals with them promptly.

## TEACHERS H8A and H8B

Teachers H8A and H8B share a classroom. Each is responsible for 14 students but most of the time they teach as a team. Specifically, they say, they teach reading separately and math together. They have a large bright room with students seated in six groups of five desks each.

Both are experienced teachers. H8A has 12 years of teaching experience, 7 in early childhood, 5 in elementary at this school. She attends and presents at many workshops and has 9 graduate credits. H8B has been teaching for 15 years, 3 at this school. She has 36 college and in-service credits beyond her master's degree.

The student population in their room is diverse. Students with disabilities include 1 ESL Hmong, 1 LD/Speech, 1 pending LD or Speech, 2 in Speech and Language, 2 OH1, 1 ED, and 1LD pending. H8B reports that 6 of her students have not been in SAGE classrooms before and H8A has 3 new to SAGE. Most students are African American.

In addition to periodic field workers and student teachers, three volunteers come to the classroom on a regular basis. One helps for 90 minutes 3 times a week to work with 5 students, one twice a week for 30 minutes to work with one student, and one twice a week for an hour for any students who need help.

### Instructional Orientation

#### Goals.

These two teachers described their goals for math and for reading similarly, referring in each case to benchmarks. When asked about math goals, the teachers responded quickly, *"Benchmarks, yes benchmarks. We have benchmarks that are very specific things that must be taught. Besides the benchmarks we have national standards which have been incorporated."*

Their goals for reading include integrated learning. They believe reading should include a variety of reading, writing, speaking and dramatizing materials and exercises along with other forms of creating. H8B says flatly: *"People need to know that this [SAGE] is an opportunity that should not be squandered using the same old techniques ... [some teachers] are still doing their direct instruction approach and not changing around their style to most benefit the students."*

The teachers show parents the third grade reading test during parent conferences in October. Some of them are very surprised, but the teachers believe it helps parents understand the seriousness of learning reading in these teachers' classroom. *"That test is really big and really awesome and of course they want their child to do well. We get a different kind of cooperation. Rather than just saying, 'My kid's learning to read.'" The teachers laugh when they speak simultaneously, "[the goal] is to pass the third grade reading test."*

The teachers balance benchmarks with an emphasis on teaching students to think. On being asked what is important for students, H8B responded:

*I hate the word to become a catchall, but to become critical thinkers. It's being able to think. If you can't think how to approach the problem, you can't get started. If you can't think well enough while reading, the reading doesn't mean anything to you. If you can't organize your thoughts, then you can't write. It's having that confidence in your ability to think something through.*

Overall, the teachers balance the basics, their benchmarks, with critical thinking. *"We like balance,"* said H8B, *"There is a time for direct instruction. There is a time for practice. There is a time for small group. There is a time for individual work. There is a time to reteach. All that stuff should happen."*

When asked whether their objectives leaned more toward the basic skills set or the critical thinking set, these teachers elaborately explained that they nest their basic skills and foundational knowledge within the problem solving and critical thinking exercises. They said they lean toward Set 2, but only because with Set 1, *"Obviously I have to teach those things. You can't problem solve if you don't understand the facts and the concepts."*

An account of a reading observation shows how these teachers casually include higher level and critical thinking in everyday lessons. H8B was reading a story to the class. Periodically she stopped to ask probing and challenging questions:

*How close would you have to be to see a lantern in the night? How dark is it? Will that give them some hope, do you think? These are wooden bridges, not like our steel bridges. They didn't have steel yet. What do you think is going to*

*happen when the logs hit the wood supports? Des Moines River. Isn't that funny? Some of you can see there are two s's, but you don't pronounce either one*

And the teachers are clear with the students about the emphasis on learning to think. At the conclusion of one assignment, H8A set aside special time to talk to her students:

O.K. please come back to your seats and hold on to your papers a minute even if you're not done. Five, four, three, two, one is coming, one. O.K. pencils down, eyes up here. How many of you thought this was hard? Thanks for being honest. This was very hard. Except for question one, the answers were not in the book. We say you had to 'read between the lines.

The last instructional goal of these teachers was to maintain high standards for student achievement. Teachers liked to remind students of the challenges in grades ahead. At one point in an assignment, H8A said to her students, *"Now look at your literature review. I want to check what you've learned. This is what you have to do in 4<sup>th</sup>, 5<sup>th</sup>, 6<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup> grade and beyond."*

### Methods.

The following four characteristics of these two teachers' instructional methods distinguish them from other teachers.

First, these teachers know and use a variety of materials. H8A and H8B said once, in all seriousness, that behind every lesson, a teacher needs 14 backup lessons. H8A elaborated, listing six good reasons for 14 backup lessons. First, she said, the students may not grasp the material in the way it's being presented. Second, they may not enjoy it. Sometimes schedules change, a special may be canceled and teachers may have to suddenly fill a timeslot. Fourth, students may not grasp the work as quickly as teachers expect so that they need to present it again. But of course, she adds, they would want to do it in another way so it's not boring. Fifth, teachers always need to be challenging the most gifted. And, sixth, sometimes they have to gear the work down so everybody understands it.

With their benchmarks in mind, these teachers feel it is necessary to supplement the recommended school's reading series. In describing their classroom reading program, the teachers said this:

*We use the Houghton Mifflin, it's what the district uses. [But] we use more trade books because a lot of the stories there (in Houghton Mifflin) we don't feel, I don't feel, the children really grasp and get into. And don't always follow the themes that we do in the third grade. And so [we] have taken it upon ourselves with our own money and classroom money to buy class textbooks that we know address what we're trying to teach in our classroom and keep the children engaged. And that's why I use them: the kids feel more successful once they've finished a whole book.*

The second important characteristic of these teachers' methods was the way in which their supplementary materials were aligned with the benchmarks and used according to the particular abilities and needs of the students in their classrooms. These teachers talked about how careful they are to tailor their instruction to the needs of each particular group of students. H8A put it this way:

It depends on what group of kids you get. H8B's whole group is weak on decoding skills so she stresses more on phonics. Mine are not weak on the decoding skills, necessarily, so I'm working more on the comprehension and strategies for talking yourself through a story and self-questioning, figuring out the vocabulary words from the content.

H8A went on to discuss students' individual differences.

*We teach mathematics; all children learn in different ways. It has to do with the multiple intelligences. So when H8B and I do math, we model it first, describe to them what we're doing. And then do multiple models together and also give them a hands-on experience with it. We'll bring out multiple manipulatives and if they're not understanding it, we always find a different way of going about it.*

And there were other ways they supplement the school's series:

*We also use mini-math lessons. It's an old Racine program where they just cover one or two things in the morning and they're just quickie kinds of things besides the math lessons that are pretty tightly planned for about 45 minutes. In the mornings, a couple mornings a week we're hitting concepts that don't need 45 minutes. They need a review or they need a quick lesson or they need an intro or repetitions.*

Teachers emphasized that everything they do relates to their overall goals. For example, in talking about manipulatives, they said, "*Hands-on experimenting. Yeah, we're pretty big on that. But there's a purpose to it. They don't just sit and play.*"

The third important characteristic of these teachers' methods was their effective methodology that always focused on academics. Observations showed that these teachers were extremely skilled in presentation and facilitation. They modeled all assignments before students began working, but they did so very quickly. The teachers said, "*Modeling? We model a lot. We model how to get along and work together. And we model how to do the math problems.* Also, both practiced scaffolding, that is helping students work to higher and higher levels, withdrawing support as students became more proficient.

And teachers never introduced a lesson without "hooking" students first. One day as a reading class concluded right before lunch, the two teachers took about 30 seconds to gather all the students on the rug and get them quiet. H8A counted slowly, "*Five, four, three, two, one.*" Then H8A read a book aloud about math, showing the class the pictures. It was a rhyming book about doing math with candies. H8B continued, having the students add columns of numbers very fast in their heads:  $9+8+7+2+5$ ,  $5+8+9+4+6$ . H8A called out the names of students as they got the answers. This whole activity lasted a short time, perhaps five to ten minutes, and then the group assembled for lunch. The teachers explained afterward that this was a warm-up to get the students excited about the afternoon math work.

One observed math lesson included a very elaborate preparatory demonstration involving lines of students marching up to the front of the room. The class figured fractions of students with long hair, short hair, boys, girls, etc. Then the class graphed the results on the board. Finally, the teachers passed out handfuls of M&Ms. Students worked on their own to figure what fraction each color of candy represented and they graphed their results. Finally the entire class graphed results for the whole class. Significantly, this entire class lasted for less than one hour and every single student was able to do the entire lesson independently.

Another important characteristic of these teachers was their high expectations for students and insistence that students be accountable. Two times during interviews, H8A expressed the importance of student independence. She said that one of the most important objectives of her teaching is to "*have [students] be responsible for their learning.*" She emphasized that "*they are doing independent learning every single day.*" One small example of their independent learning involved the student worksheets that accompanied math or science lessons. When teachers passed out worksheets, they would say to the students, "*No one will tell you what you are supposed to do; teachers will only help you read the directions.*"

On a larger scale, most math and science lessons had students all over the place, but they were always busy working. For one math assignment, students worked in pairs to test the strength of spaghetti strips when strung with washers. During about 10 minutes in the middle of the assignment, the classroom was wild. Washers were crashing to the floor, spaghetti was popping into the air, and the students were being kids, filled with enthusiasm. Contrary to the behavior of the lower teachers who spent so much time hushing their students, these teachers smiled, laughed and appeared thoroughly pleased through it all.

And when teachers determined that each pair of students had finished the experiment, they suddenly collected all the supplies. Without a word, students immediately scrambled to do the writing part of the assignment, writing their conclusions in their own words. This was the part of the assignment where students displayed their knowledge, and they buckled down to the challenge quickly without any instructions. Every single student wrote, even a young boy who was off by himself during some of the activity. And this was the afternoon, a time when some classrooms tend to coast. But there was no opting out of this assignment; there was no confusion on the part of the students. Every single student was accountable to know this information, to understand not just the numbers but the concept.

Altogether, students spent a long time, perhaps 10-15 minutes, fully focused on their writing. Throughout all this activity and change of pace, teachers said very little; there was no disciplining and only an occasional individual redirection.

The student zeal seemed to be a result of teacher effectiveness in presenting the work in a way that all students understood but also a result of teacher expectations. When asked why all the students work so diligently, H8A said, "*It's their job. This is their job. If you're out in the real world and you chose not to do this, you're going to get fired. This is your job.*"

The last characteristic that made these teachers effective was their frequency in checking students' progress and learning. When asked how they know student progress, the teachers said,

"Through practice and practice and repetition and by observation, by testing them, everything a teacher's supposed to do." The teachers said, "You're constantly checking their understanding every single day."

### Classroom Management

#### Student management.

These two teachers managed their students according to two principles: (1) Good student management means nurturing the students and granting them independence. (2) In well-managed classes, teachers have fun.

With regard to nurturing children and granting them independence, H8B and H8A have very strong ideas about the best way to manage students. H8A says, "I'm more of a facilitator than a director." H8B agrees, telling how granting students independence all starts with being a good facilitator:

*Now, that doesn't mean I'm not in charge. It doesn't mean I don't have authority, not authoritarian authority but authoritative authority.... It's much more nurturing and it's still highly expectant. That's a key thing for SAGE. I can be highly expectant because I can watch you all the way so you won't get lost.*

H8B continues, explaining that her students are highly engaged, but that is not because of anything she does directly:

*Engagement doesn't happen because I'm so good at figuring out what turns them on, it comes because they're given choices. You can't be engaged 100% of the time if you're always doing what somebody else is asking you to do. So part of our classroom management is we're not in charge all the time. They have choices.*

The teachers believe that if students are being told exactly what to do in the classroom, they will not learn to be independent and think things through:

As far as lesson management, what's most important is we want them to become independent thinkers and learners. When they go on to fourth grade, it's going to be 30 of them to one teacher. Not all their needs are going to be met all the time. That's what we're trying to teach them in here. We've told you, we've taught it, we've done our modeling. Now you come back and you show us on your own your choices.

The students in these two classes were granted a great deal of independence, and they were normal kids and not always perfectly behaved. But only once did this observer observe either teacher having to correct her class. That time H8A had gathered her students around her on the carpet and twice said softly, "Do I have to repeat the rules?" And it was quiet.

H8A said the secret to student management is treating students like grown-ups:

*I come along and say, 'This isn't working out.' I'm not laying any blame, it's not a power struggle, I didn't tell anybody they messed up. I'm just saying, 'It's not working out. What do you think you should do?' It's a lot easier being grownup when somebody treats you grownup, or to make a reasonable decision that kind of follows in a reasonable vein if you're not being told what to do all the time.*

As was demonstrated over and over, these teachers knew how to have fun. They were good-natured and they liked teaching; they smiled and laughed a lot. A good example occurred during an H8A reading class. Anytime this class is reading, it's a good time. H8A opens a book and says, "Junie B Jones and the Gisky Wisky Valentine. Wow! What a title! Look at that cover!" Students all talk enthusiastically about the cover. "I think it's from a boy. She's a little crazy. Look at her dress."

Then students begin reading. The words are hard: *familiar, arrangement, except, announcement*. Students read long passages, perhaps 15 or more sentences. In spite of the difficulty, students laugh at lines spontaneously. Sometimes H8A explains what's funny. Talking about a character in the book, H8A says, "Does she go on and on? Tasha, she reminds me of you." Everyone laughs. Then a student says, "Tasha, she is you!" Tasha is delighted and the students are pleased.

Later H8A tells the observer more about Tasha. She's ADD but extremely bright. (One day she was adding math columns faster than the adults in the room.) H8A says she cannot sit still while she works. She has to be standing and moving around her desk while she's writing. The observer mentions

that H8A and the kids compared her to Junie in the book. H8A says, *"I know. She takes that as a compliment."*

At the end of the morning, Tasha comes over to the observer and says she hopes the observer likes their class. The observer says, *"Yes I really do; do you like your class?"* She nods. Then the observer asks if it's always so much fun. Tasha responds, *"Yes. The best part is when we read."*

### Lesson management.

In this classroom, lesson management was determined by two things: a high degree of organization and moving along at a brisk pace.

By all accounts lessons were highly organized. H8B comments after looking at the Sets on Interview Two:

*We are Set 1. We know what we're doing every week on Friday afternoon. We know before that because we talk during the week. But Friday night we sit down. We know. We know. Here's everything that we're doing this week." Both teachers showed complete plan books, with lessons written out in detail.*

According to these teachers, good lesson management means moving along at a brisk pace. H8B declares, *"We're pretty fast. Both H8A and I are fast talkers."* She goes on to say the pace is intentional. *"I talk fast because they need that. If you go fast, they listen to every word. If I go slow, they listen to only every four beats. They're products of Sesame Street and pace is important."*

H8B used the words *"Hurry, hurry,"* a lot during her classes. She is very efficient and conducts class at a brisk clip. During a typical reading lesson, a student enters late. H8B does not pause but tells her to quickly get her book and have Cody show her the place. All students follow along. She asks direct questions after each student reads, always proceeding onward without skipping a beat. *"Quickly, what is Thanksgiving? Read what it says? What is a holiday? What is a tradition?"*

### Individualization

As has been stated before, these two teachers are very aware of their students' individual needs. The two teachers each have their own ways of individualizing, but regardless of which teacher is in charge, students get a great deal of attention.

When students are sitting at their desks and reading aloud, H8A is moving throughout the room, supporting students when its needed. One boy reads who is much, much slower than the others. H8A stands directly behind him and whispers the correct words so his flow is not impeded. *"Good job, Chad."*

During an interview, H8A explains how she works the room:

*I know he's weak in spelling and phonics and so I'm going to sit next to him and help him get started. Whereas I know these kids can do this and spell out the words on their own. However, they may have a question. So I'm meeting their needs while this kid needs more phonics instruction through the writing. Do you know what I'm getting at?*

Later when asked how often individual students get to display their skills and are critiqued, the H8B says, *"The whole time."* The interviewer asks, *"So every day every one is getting some kind of individual feedback?"* The teachers answer, *"Of course."*

## **Case Studies of Teachers in Lower-Achieving Classrooms (L1 –L5)**

### **TEACHER L1**

#### Background

Teacher L 1 has five years of teaching experience and has been teaching second grade in an urban elementary school for four years. She holds elementary certification with an early childhood minor and is working on her Master's degree.

L 1 teaches in a shared-space classroom, which means that one classroom is designated for two teachers each responsible for 15 students. Accommodating two teachers and 30 students in one classroom means that space is limited. As observed during classroom visits, the crowded conditions in this classroom often hindered student mobility, made it difficult to tune out the noise from the other group, and often resulted in unfavorable student-to-student proximity situations. At times, the two teachers used

a curtain strung across the center of the room as a divider for the two groups. However, the curtain only provided a visual barrier, which did little to alleviate noise and proximity issues.

During a classroom visit, the teacher explained that in her four years of teaching second grade at this school, she has shared her classroom with a different teacher each year. The two teachers also began the current school year teaching their groups of students separately. However, over the course of the school year, the teachers started to engage in more teamed teaching activities than separate instruction and found the team approach to teaching more suitable and advantageous for themselves and the students.

Although the type of reduced size class shifted from shared space to team taught by the middle of the year, the analysis of the teaching in this classroom remained focused on one of the teachers and her group of 15 students since the majority of observations occurred prior to the shift in classroom organization.

During the first part of the school, students in this classroom were divided into a high and a low group of readers with the low readers assigned to the case study teacher. She noted that the students in her group function at a reading level significantly below grade level expectations and that one of her 15 students has learning disabilities. Two helpers provide additional support in reading. One helper assists two students with reading once a week for 60 minutes; the other helper practices reading with one student once a week for 30 minutes.

### Instructional Orientation

The teacher mentioned that overall she expects students to do the best they can. She believes that it is important to make them feel successful and that they enjoy what they are doing.

Goals. The teacher stated that the most important goal for her is to have students on level or as close to level as possible. When asked about whether she leaned more toward goals related to basic skills, foundational knowledge, academics, and facts and concepts (Set 1) or more toward personal development, critical thinking, decision making, problem solving, and self-control (Set 2), she responded:

*... most importantly it would probably be the first set that you spoke of. Um, however, like we just said, a lot of the personal development, critical thinking, independent thinking, problem solving are, is key to almost the first set of skills, you know, the basic skills, the foundational knowledge, the academics, the facts. I think they all kind of intertwine.*

With regard to her instructional orientation, she continued to say the following about mathematics instruction:

*...my goal is pretty much to make the children feel comfortable with a, um, performing, um, the math problems that we have to do like two-digit addition, two-digit subtraction, borrowing, carrying, getting them prepared for third grade multiplication. Um, being able to decipher in a story problem whether they need to add or subtract, looking for the key words in a story problem. Um, learning basic facts.*

In interviews, the teacher stressed the importance of foundational knowledge in subject areas for students to be able to successfully tackle problem solving and critical thinking tasks. Classroom observations showed that the teacher consistently set aside segments of lessons in reading and mathematics for basic skill instruction.

### Methods.

The teacher stated in an interview that she uses a combination of Set 1 teaching styles (teacher directed and controlled, explicit teaching, modeling, providing practice, checking for understanding) and Set 2 teaching styles (student directed and controlled, hands-on experimenting, problem solving, student-selected content, independent learning) but would prefer Set 2. She commented that hands-on activities were her favorite method of instruction “because the children... get bored very easily and if you have been doing something and have them moving, they are more likely to pay attention and stay attentive...” The teacher summarized her teaching strategies in the following manner:

*...because of the low ability of many of my children, I do have to pull a lot [of students] out to do one-on-one instruction. I do, I first do whole group instruction, you know, teacher directed. And then I do, you know, um, on most cases I have to pull people aside and give them one-on-one attention to skills that they are not sure of or weak in.*

Observations in reading instruction indicated that it seems very important to the teacher for every student to acquire an understanding of the lesson at hand. Therefore a considerable amount of instructional time is allocated to bringing each student's skill or understanding to a certain level before moving on with the lesson.

In math the new series emphasizes manipulatives and problem solving, the teacher commented. She also pointed out some drawbacks of the series:

*The new series is not strong in skills. Um, we feel that it is still important that they need to work on their skills. They still need to know what  $5 + 2$  is without adding, counting on their fingers. So we do a mix of the textbook and basic skills.*

As noted by the teacher, both Sets of methods are utilized in the teaching of her second-grade students. The predominant teaching methods observed in both reading and mathematics instruction, however, were derived from Set 1.

## Classroom Management

### Student management.

A structure for student management was in place and was used by both teachers:

*I believe definitely, um, you have to use numerous ways to discipline. You have to be stern, but you also have to be understanding and caring. You have to, umm, follow through with what you say. You have to ... I think organization is a big part of behavior management. Um, we have a bank in our room and the children earn money [play money] for certain behaviors. And then we're working on the money as motivation, and they also get to save that money throughout the year. And at the end of the year, they get to go to our classroom store and purchase things. And, you know, when they get a detention, they loose money. They do certain things, they know they're going to loose money. I think that has really curbed some major behavior problems because they don't want to loose that money.*

The teacher stated that she leans more toward teacher-directed student management than student self-management except when students are working in the centers and have more autonomy over their behavior. However, with 30 students in a small classroom even with two teachers, problems arise and more talking occurs, she noted. The teacher described herself as "kind of a stickler for behavior." She commented that "They don't get away with much .... they know the set rules and the consequences. ... everyone is given a warning, and then I keep a daily log of behaviors." Good behavior was acknowledged with positive notes sent home.

Classroom observations indicated that in an effort to enforce the established rules, misbehavior was often dwelled on and not dealt with decisively. This was especially evident when the teacher reiterated the behavior expectations and consequences for misbehavior, which interrupted the flow of the lesson and often took away from instructional time.

### Lesson management.

A reading/language arts instructional block was scheduled for every morning of the week, and mathematics was taught in the afternoon on a daily basis. The teacher saw herself switching between Set 1 (specific goal focused, brisk pace, planned in detail, organized and sequenced, linear) and Set 2 (planned in general, spontaneous, creative, divergent, interest driven) for lesson management.

As indicated in classroom observations, lessons appeared preplanned, organized, and sequenced. However, the amount of instructional time seemed reduced by three main occurrences: 1) proximity issues, 2) behavior management, and 3) not pacing activities well. For example, the proximity of students made student movement into groups cumbersome and time consuming and often necessitated the re-arranging of desks and chairs. Student misbehavior often prompted the teacher to explain rules and consequences again. It was apparent that the teacher felt it necessary to explain the relationship between the behavior and the consequence to the student at the time of the infraction; however, this was done at the expense of instructional time. With regard to pace of lessons, in mathematics instruction, the pacing of activities was characterized by spending one third or more of the instructional time on start-up

activities rather than on practicing a new skill. Part of the new math series asked for the daily use of a start-up problem, but it's the same type of problem over and over according to the teacher. Furthermore, in an effort to assure each student's understanding of the lesson, the pace of instruction was slowed down to accommodate one student at the expense of the rest of the students rather than reteaching the student at a later time.

The shift toward a team taught classroom has brought about significant instructional changes. Beginning with the second semester of the school year, the reading/language arts program was changed to the Cunningham Four Block. The teachers planned extensively to implement this program, which incorporates the use of centers and tables rather than desks. The morning reading/language arts block begins with a whole class mini lesson. Students then move in groups from center to center and either work with one of the teachers or independently on the planned activities for the center. The teacher commented that this program is much more effective than dividing students in low and high groups of readers as in the beginning of the year. She commented that since the change she is *"actually feeling successful teaching"* and that the students are *"getting everything they need"* and *"we're finding out that it is working really well."*

#### Individualization

The teacher appeared to know students' academic strengths and needs and tried to accommodate lessons to students' needs. The teacher commented that she often plans for students' specific instructional needs. She considers student needs when grouping them for the rotation through centers so that these needs can be addressed more effectively. Most of the individualized instruction occurred in small groups and followed established instructional routines of the teacher.

### **TEACHER L2**

#### Background

Teacher L 2 has 14 years of teaching experience in second grade and has been teaching at this school for four years. She holds elementary certification for grades 1-8. Her second-grade class consists of 15 students. Three of the 15 students receive special education services for speech. She teaches in a shared-space classroom, which means one classroom is designated for two teachers each responsible for 15 students. A classroom aide works with two students twice a week for 30 minutes.

The teacher commented in an interview that she was not pleased about having to teach in a shared-space classroom and that she would much rather have her own classroom even if it meant having 30 students. She further said that not having her own space often prevented her from using instructional strategies that allow students to act out what they are working on.

It was apparent during classroom observations that the noise level from the other group in the room distracted some students. The room was very crowded and student mobility was limited. There seemed to be a constant coming and going in the room, one group lining up for a bathroom break, the other group leaving for the computer room a few minutes later.

#### Instructional Orientation

The teacher's orientation toward instruction was influenced significantly by a focus on students' academic deficiencies, behavior issues, and social concerns. The predominant mode of instruction seemed to be basic coverage of material with no accommodations for challenging higher ability students. In general, expectations seemed to be geared more toward lower-achieving students and covering the material rather than striving for higher academic achievement. Informal student evaluation through verbal feedback between student and teacher seemed to occur more frequently than formal evaluation as in the form of graded worksheets and other written assignments.

#### Goals.

The teacher stated that her overall goal was to reach each student. For reading instruction, she noted *"comprehension, decoding words, and to be able to answer in a complete sentence"* as important goals. For mathematics, her goals related to two-digit addition and subtraction, regrouping and stressing both computational and conceptual understanding. When asked if she leaned more toward goals related to basic skills, foundational knowledge, academics, and facts and concepts (Set 1) or more toward goals related to personal development, critical thinking, decision making, problem solving, and self-control (Set 2), she stated that *"I do a little bit of both, but I think I start off on probably Set 2 and then, you know,*

*working with Set 1 at the same time – basic skills.*” The teacher indicated that focusing first on the goals of Set 2 would enhance students’ readiness to learn basic skills.

#### Methods.

The teacher stated in an interview that she uses a combination of Set 1 teaching styles (teacher directed and controlled, explicit teaching, modeling, providing practice, checking for understanding) and Set 2 teaching styles (student directed and controlled, hands-on experimenting, problem solving, student-selected content, independent learning) but would probably lean more toward Set 1. Yet, the teacher described her preferred methods as *“I like a lot of activity. I like hands-on. I like for the students to be able to participate ... verbal and nonverbal.... We use a lot of drama.”* Classroom observations indicated that most instruction was teacher directed and controlled.

Observations also revealed that the teacher’s methods were characterized by haphazard strategies or spur-of-the-moment activities. A lack of thoughtfulness in the selection of teaching strategies and the selection of content seemed to result in errors or missing links when delivering a lesson. This left many students confused and unable to follow the progression of the lesson.

It is noteworthy to point out that the teacher often asked students to repeat answers over and over and in a chorus. She employed this technique in both reading and mathematics instruction and when checking answers. A reason for using this strategy may be that it offered her some control over what students were doing, and it gave the illusion that students were on task.

#### Classroom Management

##### Student management.

Classroom observations indicated that the teacher’s strategies for student management were inconsistent and ineffective. She often told students what not to do and that their behavior was inappropriate. Students seemed incognizant of appropriate behavior or had learned to ignore the teacher’s remarks. The teacher would take students out in the hallway during class to discuss inappropriate behavior while the remaining students were left on their own for extended times. It appeared that the teacher did not have a consistent strategy in place for correcting misbehavior in her classroom. In an interview, the teacher stated that she fluctuates between teacher directed student management (Set 1) and student self-management (Set 2). She further acknowledged that *“I thought I had it under control. I thought I had management, classroom management, but I’m not really sure now.”*

Moreover, the lack of effective student management may be attributed to the teacher’s inclination of calling parents and asking them to deal with the child’s misbehavior or sending the student to the principal’s office rather than addressing the behavior problems herself. As a result of the ineffective student management, a lot of instructional time was spent on redirecting students and trying to get them to attend to the lesson.

##### Lesson management.

The teacher did not have regularly scheduled times for reading/language arts or mathematics during the day, which also made it difficult to schedule classroom observations. Three of four observed lessons appeared emergent and were characterized by unclear goals and modeling; unfocused and disorganized presentation of material; and a repetitive, slow pace of activities. Significant portions of instructional time were unstructured time or wait time with students not engaged in active learning.

A vocabulary practice of words for a new story took up a whole lesson. Students were given a sheet with 25 or more words and asked to study the words while she dealt with a student in the hall. Next, students were asked to read each word aloud as a group three times. She called on students to explain the meaning of a few words or to pronounce the word for the class. Then, students were told to highlight the words they had trouble with. The teacher then walked around the room and checked that each student was highlighting words, and she occasionally asked for the explanation of a word. Some students highlighted every word, some just sat, some got out of their seats, and others were talking while the teacher walked from desk to desk.

One math lesson seemed preplanned and had less unstructured time. Teacher behavior was characterized by informing, modeling, and informal checking for understanding. More instructional material was covered during this lesson than during the other three lessons. Students were actively engaged in academic learning for most of the instructional time and used manipulatives to learn about

subtracting money. The pace of the lesson, however, was slowed down by repetitious chorus responses the teacher asked the students to engage in repeatedly.

When asked about her preference for lesson management, Set 1 (specific goal focused, brisk pace, planned in detail, organized and sequenced, linear) and Set 2 (planned in general, spontaneous, creative, divergent, interest driven), the teacher responded that she strongly prefers Set 2. Observations confirmed the teacher's preference for emergent lessons. She explained that *"I can do a lesson, I can just come up with a lesson. I can look and see what is in the book and take it from there and come up with a lesson."* The teacher's preference for emergent lessons may explain why observations in reading and mathematics showed that she often did not relate the current lesson to previous lessons or a larger unit. Often instructional objectives seemed unclear, key points were not pointed out or restated, directions to students were vague and confusing, and lessons tended to be slow in pace and of low academic learning time.

#### Individualization

Individualized instruction was not observed during classroom visits. The teacher stated in an interview that if individual students had problems understanding a lesson, she would rephrase the explanation or show the student the particular skill. She also believes that students can help explain material and noted that *"...they seem to sometimes hear it better from the peers on their level than from me."* Sometimes she uses material that is a level below grade level to re-teach students one-on-one before they are allowed to go to computer class.

### **TEACHER L3**

#### Background

L3 is a certified K-6 teacher with a master's degree. She has been teaching 15 years, 11 years in third grade at the same school. Two of her students have been identified for speech problems and two are unidentified SEN students. She has three people who help with reading. A reading resource teacher helps with the entire class twice a week and then works with individual students outside of class time. An aide comes for an hour and a half twice a week and there is a tutor who works with two of the neediest children.

#### Instructional Orientation

Goals. L3's reading goals for her students are that they are able to read and understand what they are reading. When asked in an interview what she tries to stress, L3 said she tries to stress everything.

In math, L3 said she focused on students being able to use manipulatives.

*My goal is that they're going to understand how to do manipulatives in order to figure out answers to problems, but also that they'll be able to go on from the manipulatives. Depending on manipulatives, for example, to figure out subtraction problems, to be able to go beyond that for use in their everyday life. That's my goals for them.*

#### Methods.

L3 had specific and identifiable methodology. First, she instructed the same way regardless of class or student differences. Both interviews and observations showed that L3 was consistent in her teaching, never varying her methods. All observed reading and math classes were conducted similarly. L3 stood in front of the students and demanded that students pay attention and follow along. Regardless of student interest, understanding, or energy level, classes proceeded the same, with L3 instructing slowly and methodically and student responding when called upon.

L3 preferred exercises consisting of a minimum amount of work spread out over a long period of class time. Generally, one lesson would focus on a very small amount of work to be accomplished. During an hour-long reading class, for example, each student read just one short passage and answered one question. Throughout, L3 always had all the students do the same work, all at the same time.

By her admission, L3 uses mostly direct instruction. In looking at sets one and two in the initial interview, L3 described her teaching. *"Use of manipulatives, especially to introduce a concept, to kind of show them where I'm going and what I'm actually going to be asking them to do. Probably direct instruction, a lot of that."*

L3 was careful that no students were left behind, always gearing lessons to the lowest level of student ability. Teachable moments or flashes of student excitement went unnoticed or were quashed.

Occasionally, students would show some enthusiasm, signs that they might engage in the work. At that point, L3 would always *hush* the class or stop class completely until everyone was quiet and controlled. Once when L3 was demonstrating a math game and got a perfect score, a student whispered, "Wow." L3 turned and told her, "*Shh.*"

Most classroom comments were related to behavior and not to student learning or comprehension. The following is an example of L3 providing instruction:

*No, no wait until I say, 'begin,' I like the way Sara and Georgia are sitting quietly and waiting. Shh, shh, remember what we have been talking about, you must do active listening. I love the way Charles is paying attention. Excellent job. Table One needs to be paying attention.*

L3 used demonstrations and modeling, but students oftentimes did not understand what she was doing or they were not paying attention. Then at the end of class, when it was obvious students did not understand, she would try again to explain the work. She admitted that the new math series was difficult for her to understand:

*You have to read over this particular lesson numerous times to make sure that it's basically a fail-safe type of thing on my part, to make sure that they totally, totally, totally understand it. It takes a lot of time. It's basically taking the math book home every night, looking at it and reading over this lesson a number of times to see if this is the way you can do it or ways you have to modify it for your particular class.*

Sometimes the work was confusing. For example, L3 spent more than 15 minutes attempting to explain to students how to play a particular math game that was part of the series. However, in her explanation, she did not tell the point of the game, nor did she show strategies for getting a good score. When the class finally received the materials to begin playing, L3 concentrated on keeping the class quiet, having students follow directions perfectly when placing their answers on the paper but not offering help in how to play the game. After some time, it became obvious the students did not know what they were doing. In the end, after the materials were collected, she tried once again to explain.

### Classroom Management

Classroom management was very time consuming for L3. She moved very slowly, spoke slowly and taught class deliberately. Giving directions took a long time. It was not unusual for her to spend 15 minutes directing a class before handing out materials. Keeping class orderly was time consuming. She paused frequently and waited as long as it took for the class to focus on her teaching. Even sharpening pencils took a long time as L3 had students line up at her desk while she sharpened each of their pencils.

### Student management.

L3 said she wanted students to be independent but didn't feel they were ready for it. "*Part of the difficulties with this particular class,*" L3 said, "*is that we have a lot of new people who have moved into our school. They are not aware of the rules and they're not aware of self-control.*" L3 said that having a small class helps in holding everyone's attention. "*It's easier to talk with a small group of kids because they have an easier time watching you and following along than a large class.*"

In interviews L3 said that the most important aspects of student management were firmness and control. Observations and interviews pointed out that she frequently paused, sometimes for long periods of time, to get everyone's attention. The best thing to do, she said, "*If you notice that they're really disruptive or whatever, to just stop and to just stand.*"

L3 was consistently gentle, kind and soft, but she rarely laughed or smiled. Once she did laugh when she spilled some cards. Student reaction was barely audible, but she quickly hushed the class, saying *shh* four times.

L3 was compassionate and spoke to the fact that her students had difficult home lives. "*I'm definitely empathetic to their particular situations. Each little person in this classroom has their own little jar of marbles that they have to deal with.*"

*That's the nice thing about having a small class. That you can be well aware of their little problems. You are aware. They seem to share more with you, what's going on. You know, mom and dad are getting a divorce, mom and dad are separated, mom and dad are fighting, mom and dad don't get along. They're able to share more of that and feel more of that with you than they would, I think in a bigger class. Oh definitely. They seem to confide in you.*

### Lesson management.

L3 preferred to teach lessons very slowly so that no one was left behind. When asked in an interview why she preferred a slow pace, L3 said, *“Especially with the new math series, it’s something that has to be repeated, repeated, repeated.”* On occasion, Mary said, she would let the class follow their interests, sometimes resulting in long-term, in-depth projects. *“More often than not, especially if it’s a discussion-oriented thing, they’ll just kind of focus on it. And we’ll talk about it for a long, long time.”*

### Individualization

*When asked about individualization, meeting the needs of individual students, L3 had difficulty conceptualizing her answer:*

*Well, we try to meet their needs, by, you know, walking around an awful lot. And kind of seeing what they’re doing, what they’re able to do and correct their work every single night so I know exactly what level my kids are on. I see every single thing that they’re doing.*

So even when she said she knew the academic level of each student, L3 failed to individualize during class time. Sometimes she seemed troubled rather than challenged or motivated by student differences, especially their questions:

*It’s really hard to just be able to teach without constantly being interrupted. Like, for example, them asking questions about things that are not important to what you’re talking about at that time. You know, they have a little question on their little minds and they want to ask that question.*

When pressed to recall examples of where she individualizes her teaching, L3 thought only in terms of her direct instruction of teaching that required only right and wrong answers:

*Usually, we have where they’ll do problems or they’ll put something up on the board. We’ll take things like in reading and they’ll be able to manipulate things back and forth. They’ll write out reports on their own. They’ll do investigation on their own, in terms of going to the library and finding out information or something. Yeah, they’re all on different levels in class and we try to approach each and every level. It’s showing what you have on the board, constant repetition, walking around. I know most of the kids in this classroom, from the highest level to the lowest level, are very insecure with almost anything they do. Everything is, ‘Is this right? Is this right? Is this right? Is this right?’ They’ll come up and say, ‘Is this right?’ They’re still, even at this point, they’re still insecure as to what it is that they’re doing.*

Observations showed that L3 did not individualize during class time. She checked students’ progress by reading their papers after school rather than providing individual feedback during class time. She preferred to teach in unison rather than to individualize instruction. She preferred that bright students did not shine and she was careful to not compliment any one student on anything other than behavior. Her intent was to keep the class under control and to treat all students the same.

## **TEACHER L4**

### Background

L4 shares a large classroom with P2. L4 says they are teaching as a team, but she lists her class enrollment as 15 students. L4 has been teaching full-time for three and one half years and she was also a sub for a year. She has been in second grade for two and a half years, at this school for three and a half years. She has a bachelor’s degree and a master’s in elementary education.

L4 has four adults who help in her room. The LD teacher takes four students for 45 minutes four times a week. The reading specialist takes five students for 45 minutes five times a week. A volunteer works with four students for an hour once a week and a volunteer helps with two students an hour a week.

### Instructional Orientation

Goals. L4’s goals for her students included wanting them to develop the skills third grade students are supposed to have:

*In all the different academic areas, we try to make sure the students meet all the district objectives, reading in particular, third grade reading tests. We're really working to prepare them to comprehend, read well orally, to learn all the reading strategies, to do all the tests.*

She also spoke of the balance between basic skills and critical thinking:

*Well, I think they're equally important. You know, you can have the basic skills, the foundational knowledge, the academics, the facts, the concepts. You know, there's something sorely missing if they can't think critically, make decisions and solve problems. On the other hand, you know, if they can do all the things in set two, and we're working a lot on problem solving and self-control, and they don't know basic skills and they can't add two plus two, then again it's not going to work. I think they go hand in hand and they're really both very important. I think one thing I see and have seen the past several years in Carleton is students are very low and very much in need of critical thinking. Problem solving seems to be an area that they're just not accustomed to working on. They're very good at filling out the worksheets and at, you know, rote stuff, but the other is what they need to strengthen.*

L4's instructional methodology was distinguished by the following characteristics: First, she appeared to have one sure way of instructing which she used regardless of class or student differences. It was obvious visiting her classroom that she offered her students no surprises. She had a low-key, comfortable style of instruction that the students were familiar with and could count on day in and day out. Classes were very predictable.

A constant in L4's reading methodology was for her to be one of the readers. While she made sure that each student read, she had them read only a few sentences and she read longer passages and she read often, sometimes after each reader. She was a very good reader so the class refocused each time she began and her reading improved the flow of the class.

*The second characteristic that distinguished this teacher's methodology was her preference to spread out a minimum amount of student learning over a long period of time. Classes proceeded very slowly with L4 sometimes hesitating or pausing to change her mind about what would come next in the day or in the lesson. And relatively small activities took a great deal of time. During one 50-minute reading class, the student activity consisted of just two things: reviewing the morning work and reading a couple sentences. That was the extent of the reading lesson.*

*The third characteristic of this teacher was her preference for students all doing the same activity at the same time, generally being taught with direct instruction. Even manipulatives were taught in unison. While L4 said she believes in using a questioning approach when she teaches, she qualified that, going on to say that "there are certainly times, especially in third grade, when you have to teach to the kids with direct instruction, give them information that they wouldn't have otherwise." She also said that teacher-directed activity is preferable because classrooms should be controlled and quiet. During observations L4 used direct instruction almost entirely*

The next characteristic of this teaching was the care that was taken so that no student was left behind. Work was always geared to the lowest level of student ability. For example, in reading class, L4 would have students point to a particular object in their reading books and then walk the entire classroom to be sure all students were pointing to the correct item.

L4 preferred not to challenge students during class time. In one reading class, the story took place in 1919. L4 said that because the class had not done subtraction that advanced, she would determine how many years ago that was. Turning her back to the class, she figured that the story took place 81 years ago. (Other teachers might have challenged the class to at least think about ways to do that kind of subtraction.)

On one occasion students were challenged, but it occurred outside of class time. Half the class left for a bathroom break, and L4 said while the other half waited, they would do brain questions. Two boys leaped from their seats and ran to the back of the room to get the box of trivia questions. A lively exchange ensued with students fully engaged, excited and challenged while L4 asked three questions. This kind of activity was deemed appropriate for non-curricular work and when some of the students were out of the room but was not a part of reading or math lessons.

*Another aspect of L4's instruction was the use of demonstrations or modeling, but oftentimes students did not understand what she was doing or they did not pay attention. Two days in a row, L4 used an overhead to try to explain to students how to schedule activities for a two-hour party. (This is a lesson from the Investigations math series.) The first day her explanation, along with a brief math problem warm-*

up and the students brainstorming of ideas for party activities took 45 minutes, leaving the students just 10 minutes to break into groups and work on the problem.

L4 announced the next day that she had looked at their work after school and the students were confused. When asked what the problem was, students said L4 wasn't leaving time between activities. She explained that in this case, one activity would begin the instant the previous one ended. This did not sit well with the children. And even after L4 demonstrated once again how to do the lesson and after the second day of working in groups, most were unable to complete this assignment.

In neither demonstration did L4 show any strategies for doing the work; she left that up to the students. However at the end of this second day of class, she decided to show/model the strategy for this exercise. A student immediately asked if she could have her paper back (presumably because she now understood what to do), but L4 said no they wouldn't be working on this again for several days.

The last characteristic of this teacher's methodology was her preference to check student progress by reading their papers after school rather than giving individual feedback during class. L4 talked twice to the class about reading over student papers at night to see how they were understanding the work. But while being observed, these students did not get any direct or individual feedback on their understanding of the lessons. L4 seemed unaware during class time of whether students understood the material or not and did not do informal assessments during the day.

### Classroom Management

L4's way of teaching, using slow paced direction instruction, may have resulted from her management theory that classrooms should be controlled and quiet. She said while she might have preferred that the class be more student-directed, *"with the students we're working with, sometimes [teacher direction] is used more than learning independently because you can control more. They can sit and do their work and not get into behavioral things."*

Student management. L4 seemed to want students to be independent but didn't feel they were ready for it:

One of the main things overall at third grade is they are becoming more independent workers, independent learners. We're finding that the kids coming into third grade are just so dependent on the teacher and often do not read directions on their own, don't even try, they're almost expecting to get immediate help. It's a problem we're hearing from the fourth grade teachers. So that's one of the overall things we hope to accomplish.

Despite this belief, L4 allowed her students to work independently only two times while being observed and each time very briefly (perhaps 10 minutes or less). Both times L4 seemed nervous. She blinked the lights several times during those times to insist that students quiet down even though the noise level was very low compared to other observed classrooms.

*Overall, L4 was gentle, kind and soft, but she rarely laughed or smiled. When told she is very positive with her students, L4 said, "I try to be as positive as possible. These kids come from backgrounds where they don't get that at home. It's so important for any student, but particularly these students." L4 was compassionate about students' difficult home lives. Observations indicated she practiced what she believed in regards to student management. "In general with behavior, do things in a quiet and calm manner, try to keep it quiet, cut down on the embarrassment."*

### Lesson management.

In L4's class, transitions and overall classroom organization was very time consuming. Students took a long time to put away one set of books and take out another. L4 always seemed surprised that it took them so long but she waited patiently. The observer never heard her say, *"hurry."*

### Individualization

When L4 talks about individualization, she means dividing students into groups according to ability:

*Well, before SAGE when I taught 30 kids, it was harder to individualize the curriculum and meet each student's separate needs and work with them where they're at, helping them grow from there. And now, with two teachers in the room, it's easier to do that. We can split up the groups. In reading, for example, about half the class is reading on grade level and we can work with them with reading materials at their level. And the kids who are below reading level and need extra*

*support, one of us can take them and work with them at their level. We're not just taking the whole group together and just working toward the middle, teaching toward the middle.*

In interviews, L4 never mentioned individual students' academic differences leading one to believe her concern was the class in general rather than students in particular. This was demonstrated by her preference for teaching her classes in unison rather than individualizing learning and also her preference that bright students not shine. She was careful not to embarrass anyone and to compliment everyone.

## **TEACHER TEAM L5A and L5B**

### Background

L5A has a bachelor's degree in elementary education and is licensed to teach in K-6. She has spent 30 years, nearly her entire career, at her current school. Approximately 20 years have been in third grade. L5B studied computer programming and business management at the college level and is working on a master's degree in educational leadership. She is licensed in grades 1-8 and has five years of teaching experience, beginning with two in a private school and then three at her current school, including two years in third grade. She listed numerous in-service programs that she has attended.

L5A and L5B teach as a team, sharing 30 students, many of whom speak English as their second language (mostly Spanish). There are currently four students diagnosed as learning disabled. No additional personnel help in the classroom, but the four students leave for special help, mainly for reading, for about two hours a day. One leaves during reading time; the others leave during other subjects.

### Instructional Orientation

L5A is clearly the lead teacher. L5A asks her students to treat her with the respect they would give their grandmother and sees herself as bringing fun to the class:

*I try to put a lot of my personality in. And I'm a joker. I tease. I enjoy people that have a sense of humor.... I don't want to be an entertainer, but I don't want it to be boring.*

During observations, L5A tended to sit at the overhead projector and lead the instruction. She did not generally allow students to carry her humor further and discouraged their remarks. She sometimes seemed tired out. At the same time, L5B gave suggestions and reminders aloud as she walked or sat among the students. L5B said that her teaching is epitomized by getting students moving and involved, "*I may get them up, line 'em up, move 'em around. 'What about this? And how could we make this?'*" During observations, students' sanctioned movement was generally limited to passing and reaching for materials.

There were clues that expectations in this class were not high. When the class returned very late from computer lab, there was no mention of making up anything that had been missed. L5B was frequently absent from the classroom. The teachers did not expect to accomplish much in December because "*it's all downhill.*" Their feelings about Fridays--*Quiz, Game, and Reward Day*--seemed to be similar.

### Goals.

The goal in math, according to L5A, is to learn how to apply math and reason out solutions. Conceptual understanding is generally felt to precede computational skill. In reading, the goal is to have very good readers who understand and are able to make inferences from clues. In a general sense, their goals are for students to make at least a year's gain, to be able to get along in the world (socialization), and build their self-esteem, especially for the slower students. They want to help students become less dependent on teachers for continual feedback and basic tasks.

### Methods.

The teachers said their reading instruction is direct. In math they said they precede direct instruction with discovery learning:

*We give them an opportunity to be involved in it... We want them to know that there's more than one way to solve a problem.... The direct instruction basically is going to come after the discovery. We want them to discover a lot on their own, then we have their involvement.*

*In math and science it's more Set 2, but overall it's Set 1.... When it's more controlled and those personalities aren't feeding off each other, they're focused more, they're learning more.... That self-confidence is starting to rise.*

A number of students read below grade level. In addition to the adopted series, those children are provided a series of trade books at their own reading levels. While each teacher meets with a reading group, the other children work at SRA continuous-progress materials, a listening center, computer tutorials, and English and spelling work. All but one of the learning disabled children remain in the room during reading period, although they all leave for additional reading help. Several students go to Writing to Read lab. L5A described a typical reading lesson:

*We might review our homework [questions about an assigned chapter book].... Generally we have whole class introduction of background...finding out what they know about the main topic.... We go into the vocabulary, we do dictionary skills, and then we introduce the characters. Then we break up into groups, and we do our guided reading.... In the group I will give them a purpose to read.... a question.... By the time they finish reading...I will ask some more questions.... 'Which sentence or sentences let you know this?'... At the end we test their oral reading. Then we give them a general little comprehension quiz on Friday.*

L5A said that when a child cannot read a word, the strategy is to help find phonic "chunks" of two or more letters at the beginning and end. In one instance, a child asked for help and L5A asked if the word was a "consonant plus y" word. The child did not seem to understand, but no further help was offered at that point.

Reading group lessons dragged. The teachers seemed to try to relate aspects of the stories to the children's experience but did not elicit much interest. The teachers asked content questions that seemed perfunctory (e.g., *Find the sentence that tells me why Addie spent so much time alone.*) and many students seemed unable or unwilling to answer. The teachers interrupted silent reading with vocabulary questions. L5B addressed nearly all her questions to the boys in her group and seemed to ignore the girls. Both teachers required some children to raise their hands but allowed others to call out.

While meeting with groups, the teachers did not have a firm grasp on what other students were doing, literally behind their backs. Some accomplished little or nothing on their own. The SRA cards seemed to evoke little interest or care. At the listening station, at one point, only one of the seven children was on task.

In math, the adopted text is supplemented with computation materials. L5A described the usual daily math sequence as starting with a story problem, followed by "*quite a bit of review*" of something done in the past--multiplication, for example--then an investigation from the textbook. To get immediate feedback from students, the teachers had them use individual slates they keep at their desks.

One math period began with creating pictographs and ended with using balance scales. In the pictograph activity, students proceeded in different ways, some showing little understanding. In the scale activity, there was difficulty in maintaining focus on its purpose. Some students seemed distracted by the objects to be placed on the scale and did not seem to have mastered its use. When the slates were used, conflicts arose over the chalk.

### Classroom and Lesson Management

L5A considers this year's class to be less mature than classes in recent years. This class, she said, has experienced considerable student turnover with better students being replaced with students at much lower levels.

### Student Management.

L5A characterized their student management as teacher-directed and firm (Set 1). In observations, student management was often ineffective. Criticisms, reprimands, and threats of sanctions were observed more often than compliments. Individuals were cited publicly, as was the class as a whole, mostly for talking out of turn. Threats included making up time during lunch, losing computer time, or doing an extra task. Privileges (e.g., little tasks that let students leave their seat) and denial of privileges were used as rewards and punishments. Some students seemed to resent each other's successes, complaining when someone else got a chance.

Several different phrases were employed to signal that attention was required. A bell was rung for the same purpose. When these measures were insufficient, a countdown of *Three...two...one* was used. If that did not work, all students were to place "heads down" on their desks. One lesson resumed

after a countdown, even though talking had not stopped. Names of violators were listed on the board, with check marks indicating punishment (e.g., writing about what was done), a call home, or a trip to the principal. The high frequency of off-task behavior suggests that some of the difficulties in this class may be due to a lack of clearly established behavioral expectations by both teachers early in the year.

### Lesson Management.

L5A described lesson management as more like Set 2:

*Sometimes I present a challenge, sometimes I have to go back and revamp what I am trying to do. Maybe I was moving this too fast. Maybe I need to step back and present this in another way.... Sometimes in the middle of the lesson I may go and make out a different set of lesson plans in my head.... I am trying to analyze what is it that I should do.*

Transitions did not take long. The teachers noted that if one of them is not getting an idea across, the other will try. However, there sometimes seemed to be a need for more careful planning of the steps in a lesson and better anticipation of the difficulties students might experience.

### Individualization

Before school starts and while most of the class is at the computer lab, L5A works with several very low readers. She described them as eager to stay with her to work hard to raise their reading scores. When observed during that period, however, they sat with nothing to do while she posted papers on the walls.

The teachers spoke of their ability as a team to show students different ways of approaching a problem. L5B said that they nearly always check for understanding after instruction by asking, “*How many of you understand? Hands are supposed to go up. If they don’t, one of us may come up with another way and say, ‘Well, what about this way?’*” When observed, however, L5A asked if anyone had questions and someone answered Yes, but she went right on. Checking student work and giving feedback seemed a hit-or-miss process. After one presentation, as students were doing their seatwork, the teachers dwelled upon certain students for as long as five minutes and seemed to ignore others. Several were off task even while the teachers were in proximity to them.

The teachers’ complimentary feedback, rather than being connected specifically to a child’s positive action or answer, was often general and vague. Feedback seemed to focus on style, not substance, “*Yesterday...you thought you were pretty sharp*” or “*He was on the ball in computers*” or “*You’re hot today.*” Statements like these suggest a sense of humor or identification with the children’s peer culture. They also seem to send a mixed message as to whether students should attribute their success to ability, effort, or luck. Rather than pointing out specific strengths or weaknesses in students’ work, feedback was often about whether or not they were working or how long they were taking.

### Case Study Synthesis

The case studies of reduced class size teaching of second-and-third-grade teachers reinforce and advance the findings from the study of reduced class size teaching of first-grade teachers conducted in 1999-2000. The findings reveal that teachers in higher-achieving second-and third-grade classrooms have an instructional orientation (goals sought by the teacher and methods used to achieve the goals), management style (student discipline and lesson organization), and individualization focus similar to higher-achieving first-grade teachers. In regard to teachers in lower-achieving classrooms, the case studies reveal that the reduced class size teaching of second- and third-grade teachers consists of another type of less effective teaching in addition to that found at the first-grade level.

#### Higher-Achieving Teachers

The goals of the higher-achieving second-and third-grade teachers, according to the case studies, stress both foundational learning and personal learning. These higher-achieving teachers want their students to acquire basic knowledge and skill but also to become critical thinkers and able problem solvers. In their instructional orientation and practice, these two kinds of goals are not equal, however. When allocating time for instructional purposes, foundational goals are given a higher priority. Academic foundations related to benchmarks and standards are attended to first. Attention to thinking and other personal or social goals is secondary. The teachers typically do not begin with personal goals and move to foundational goals. In some cases, they may integrate the two kinds of goals, but they do not spend an equal amount of time developing each type of goal.

The primary teaching method of the higher-achieving teachers is explicit instruction. The teachers give clear directions, explain concepts, model procedures, require practice, provide feedback, and scaffold understanding. They also engage their students in more experiential learning consisting of authentic tasks, challenging problems, and interesting materials. Similar to the relationship of personal goals to foundational goals, experiential learning routinely follows more teacher centered instruction. It occurs after students have acquired a firm grasp of the targeted knowledge or skills in an effort to augment and extend learnings. Instances of a less linear relationship of the two types of methods where more direct instruction and experiential method are interspersed were not often observed. For higher-achieving teachers, explicit teaching is used first and more frequently than experiential methods.

Turning to management, both student management and lesson management of higher-achieving teachers are characterized by structure. In terms of student management, the higher-achieving teachers have established rules, routines, and reward systems. They are firm, decisive, consistent, and fair. Some teachers are more democratic and give students more independence than other teachers, but where more student-reliant discipline occurs, it results from a comprehensive management plan developed and administered by the teacher.

The structure found in the lesson management of higher-achieving teachers manifests itself in carefully planned activities with clear goals, logical structure, and step-by-step content progression. The lessons proceed at a brisk pace. Diversions from the goal in terms of unrelated emergent teacher or student interests are exceptions rather than a customary practice. Further, the lessons are often presented with enthusiasm, energy, and a commitment to accomplishment.

The outcome of the structured management of the higher-achieving teacher is an increase in instructional time. Teachers have more time to devote to individual students. All reduced class size teachers focus on individual students, as previous SAGE reports have documented. But, higher-achieving teachers give more attention to individual students than other teachers, and they give it in the form of direct instruction related to foundational learning. Constantly individual students are encouraged to verbalize their understandings or display their skills, offered critique and encouragement, provided explanations and resources, and assigned appropriate tasks. Among higher-achieving teachers, the articulation-critique diad is a dominant feature of their teaching whether it is in tutoring situations, small group teaching, or large group teaching. Consequently, the academic learning of individual students is monitored more frequently and in various ways.

Lower-achieving teachers, the case studies reveal, have a profile of teaching behaviors different from that of the higher-achieving teachers at the second-and third-grade level and also diverge from that of the lower-achieving first-grade teachers studied in 1999-2000. The dominant set of practices used by lower-achieving teachers found last year consisted of personal goals, experiential learning, emergent discipline, disorganized lessons, and individualization of reduced quantity and quality. This same set of practices was employed by one of the lower-achieving second-grade teachers this year, but overall for the other second-and third-grade lower-achieving teachers another pattern of teaching practices was identified.

This year, most of the lower-achieving teachers had an instructional orientation similar to that of the higher-achieving teachers. They focused on both foundational and personal goals and they used both teacher directed and experiential learning methods, although they expressed a preference for experiential learning methods. Their management, however, only reflected the management of higher-achieving teachers in part. They had rules and routines and they were generally positive and fair, but they appeared to be overly concerned with maintaining order. They often would dwell on misbehavior, be excessively concerned with noise, and interrupt their teaching waiting for students to attend. Their departure from the higher-achieving teachers, then, was mostly in their inability to implement the student management program they had identified. Rather than create more instructional time, their management actions caused less time to be available for instruction.

Where the lower-achieving teachers most clearly depart from the higher-achieving teachers is in the area of lesson management. Here they resemble the first-grade lower-achieving teachers. Some of the lower-achieving teachers had carefully planned lessons with identified objectives and appropriate content, but both the more planned teachers and the less planned teachers presented lessons that were slow and dull. The lessons were begun with lengthy directions or explanations rather than a brisk, catchy introduction, transitions were missing or awkward rather than a seamless logical movement to the next activity, and concepts or skills were examined at extraordinary length rather than presented and revisited.

Further, the actions of many of the lower-achieving teachers lacked enthusiasm and diligence. A sense of commitment and an expectation that all students will achieve was often not evident.

Even though the goals and methods of the lower-achieving teachers reflect those of the higher-achieving teachers, the lesson management as well as the student management of the lower-achieving teachers results, ultimately, in less individualization. Although some individual articulation and critique occurs, more total group lessons with unison group responding are used by these teachers than the higher-achieving teachers.

In summary, the difference between the higher-achieving teachers and lower-achieving teachers is a difference in intention, action, or both. The higher-achieving teachers have an academic achievement focus and they have the ability to organize the classroom and present lessons efficiently and effectively to individual students. The lower-achieving teachers may have an academic achievement focus or they may have a more personal focus and they may be able to present lessons consistent with the focus they support, but their ability to organize the classroom in an efficient and effective way that maximizes individualization is limited.

#### Revised Model of Effective Reduced Class Size Teaching

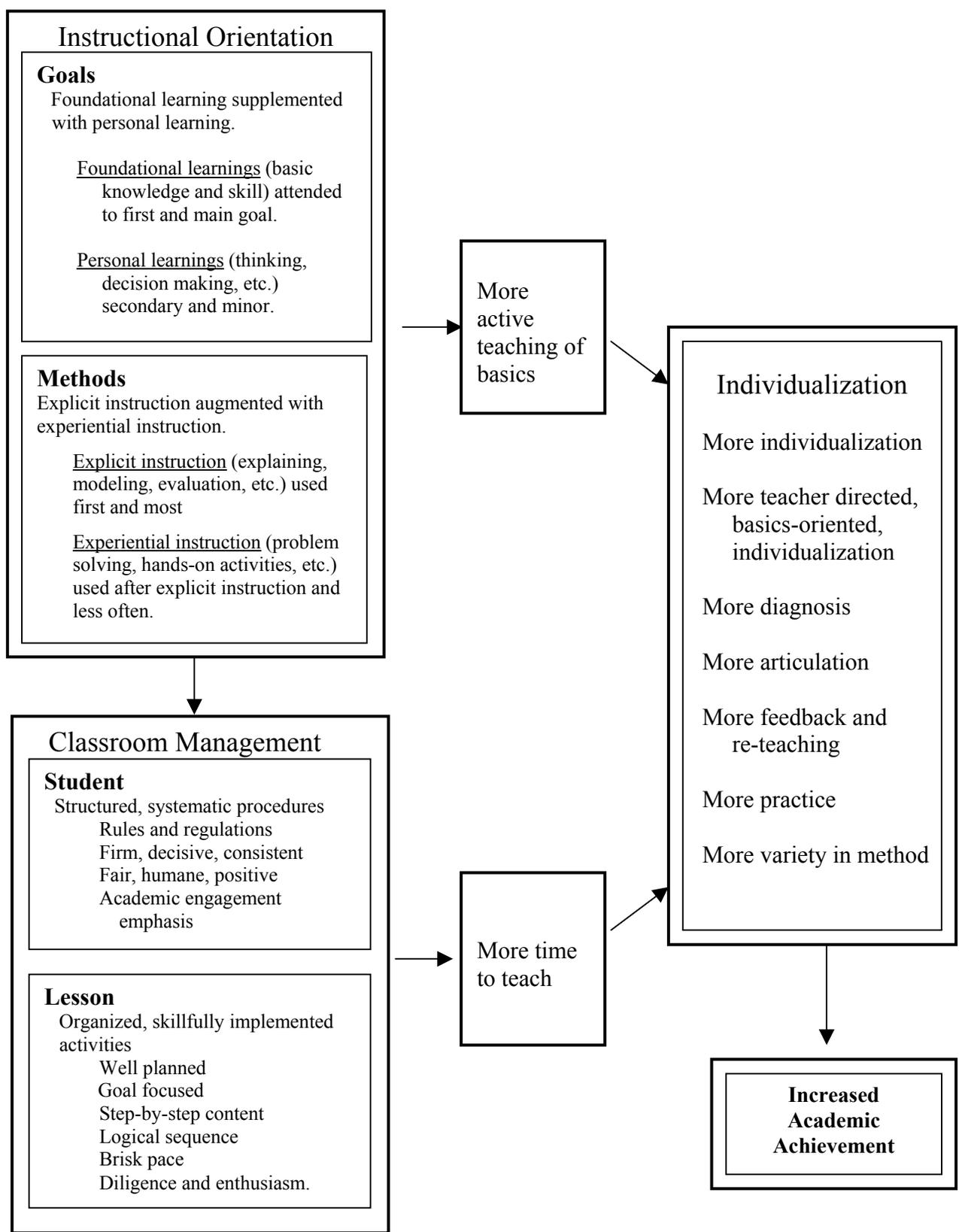
Data from the case studies of higher- and lower-achieving second- and third-grade teachers have been combined with data from a re-examination of the study of higher- and lower-achieving first-grade teachers to create a revised model of effective primary school reduced class size teaching and learning. The model displayed in Figure 1 illustrates how individualization, which is the chief product of all reduced class size teaching, occurs in the more effective reduced size classes. In comparison to less effective reduced size classes, there is more attention given to individual students. Individual student articulation and teacher critique is a constant classroom event because teachers have the time to devote to individual students as a result of having established a well managed classroom. Carefully structured and administered discipline policies maximize student attention to academic pursuits and organized, sequenced lessons focus on important goals with energy and commitment. Also, in comparison to some, but not all, less effective reduced size classes, the focus of the individualization is the direct teaching of foundational knowledge and skills. The more effective teachers believe in the importance of acquiring basic learnings as a first priority. Other learnings are attended to when and if basic learnings are mastered. They also believe that the most effective way for students to acquire basic learnings is to explicitly teach them rather than to discover them through problem solving activities. Experiential learning is not neglected by more effective teachers, but they believe it is more effective after students have acquired foundational learnings.

For individualization to produce increased academic achievement, the goals, methods, student management, and lesson management of the higher-achieving teachers must all be present in some form. When they are all missing, lower student achievement results, as has been found with some teachers. If lesson management that consists of well planned activities, logically organized tasks, brisk pace, and enthusiasm as well as similar characteristics is not present, greatly increased academic achievement is not likely to occur as has been found with other less effective teachers. Although no teachers have been found that use all but one of the other elements in the way that the higher-achieving teachers use them, it is reasonable to speculate that the absence of either foundational goals, explicit teaching, or structured student management would similarly jeopardize increased academic achievement.

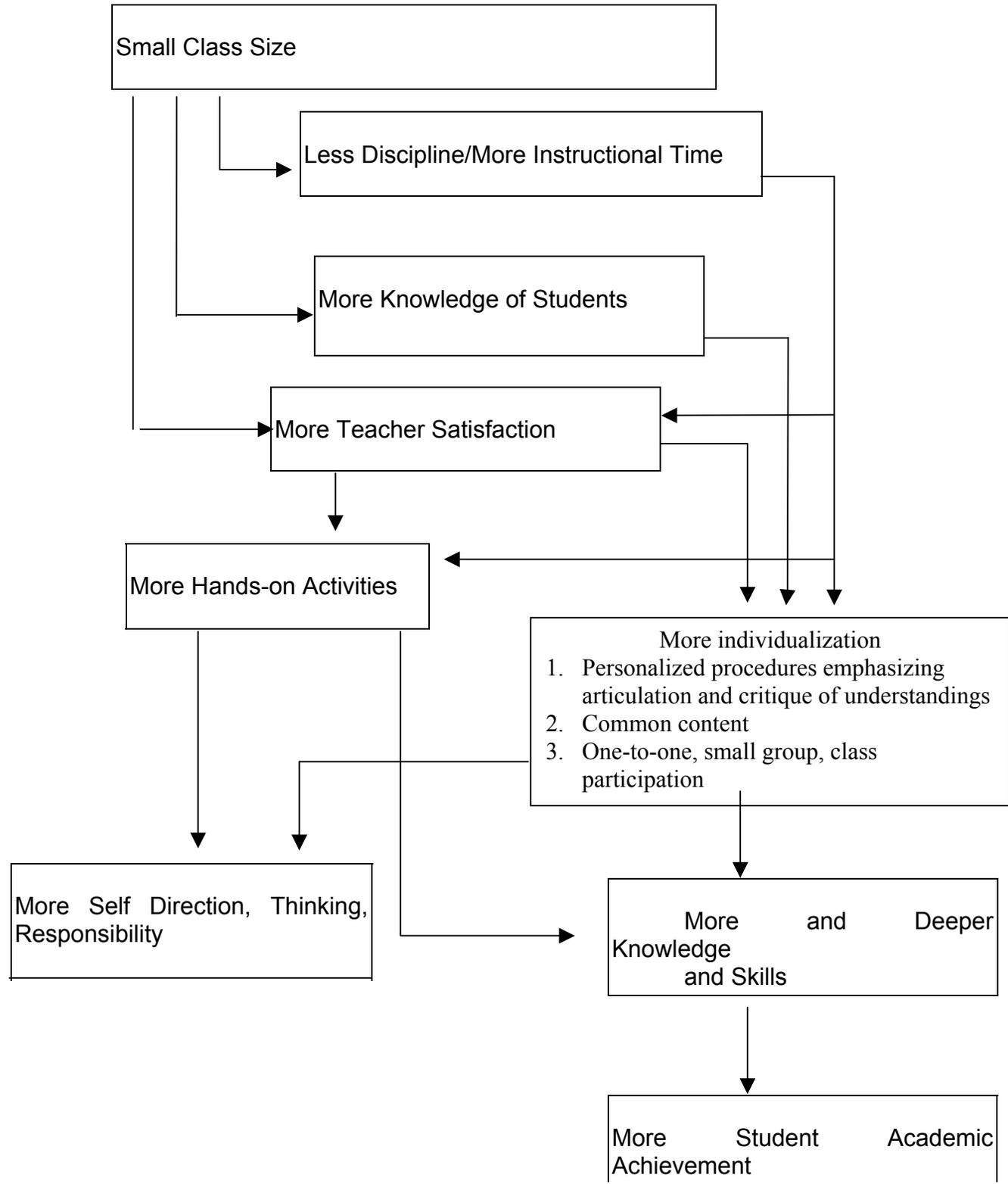
#### Revised General Model of Reduced Class Size Teaching

The results of two years of examining more effective and less effective teachers suggest a revised version of the general model of reduced class size teaching and learning. The original model depicted more student self-direction, thinking, and responsibility resulting from more hands-on activities as leading to more student achievement. Although increased use of hands-on activities probably occurs in all reduced size classes and in some it produces more student self-direction, thinking, and responsibility, its impact on academic achievement in comparison to the impact of foundational knowledge and skills is uncertain. The revised model, as presented in Figure 2, reflects this new conceptualization. It also contains some changes in terminology that more adequately portray what has been revealed about reduced class size teaching.

**Figure 1.** A Model of Effective Reduced Class Size Teaching and Learning



**Figure 2.** A Model of Reduced Class Size Teaching and Learning



### Teacher and Principal Questionnaires

In this section of the report findings from the teacher questionnaire and the principal questionnaire are presented. Findings are organized into the following categories: Effects of reduced student-teacher ratio on classroom teaching, rigorous curriculum, professional development, and family involvement.

#### Effects of Reduced Student-Teacher Ratio on Classroom Teaching

Self-reported data from all SAGE teachers regarding their teaching are contained in Tables 29-32. These data were obtained from the Teacher Questionnaire (Appendix E) administered in the spring. Table 29 shows that for the total group of SAGE teachers, the teaching behaviors that received the highest rating (strongly agree) are *teacher enthusiasm*, *individualization*, *engaging students in discussion* followed by *using hands-on activities*, *teaching rather than managing the classroom*, and *covering more content*. This also holds true when the ratings of *agree* and *strongly agree* are combined with 85.5% of the teachers noting an increase in *spend more time in individualized instruction*, *assessing learning*, *providing learning activities*, and *giving help* in their reduced-size classes. While 68% or more of the teachers rate all 12 items in the high group of ratings (agree and strongly agree), two more student-centered teacher behaviors, *organizing students into cooperative learning groups* and *offering students more opportunities to choose among learning activities and materials*, received comparatively lower ratings.

**Table 29.** Total Teacher Questionnaire Results, Grades K-3 (Percentages) 2000-01

ITEM	Strongly Disagree	Disagree	Sometimes	Agree	Strongly Agree	No* Response
1. More time teaching	1.0	1.7	8.5	34.5	45.2	9.2
2. Covered more content	0.2	1.7	8.2	37.0	44.0	8.9
3. Integrated content	0.2	0.7	8.0	46.4	35.7	8.9
4. More depth	0.2	1.0	11.4	38.9	39.6	8.9
5. Individualization	0.2	1.2	4.1	28.3	57.2	8.0
6. More engaging	0.2	0.7	5.8	27.8	56.5	8.9
7. More Hands-on	0.2	1.2	7.5	36.2	45.9	8.9
8. Student's knowledge	0.2	1.4	10.1	44.9	34.3	8.9
9. Problem solving	0.2	1.2	8.9	41.3	39.1	9.2
10. Cooperative groups	0.2	2.4	15.9	36.5	35.7	9.2
11. More opportunities	0.2	2.4	19.6	40.6	28.3	8.9
12. Teacher enthusiasm	0.2	0.7	6.3	23.7	60.1	8.9

N=414

\*Teachers whose teaching experience has always been with a small class were asked to skip part A of the questionnaire since they lacked a comparison base needed to answer the questions for this part.

Teachers were also asked to select the three most significant ways their teaching has been affected by a reduced student-teacher rate. The rankings for the twelve items are shown in Table 30. Teacher rankings of the most significant teaching behaviors related to smaller class sizes are similar to responses reported in Table 29 with *individualization* receiving the highest rating followed by *more time for teaching*, *more engaging*, and *more hands-on*. *Teacher enthusiasm*, however, did not receive a high ranking although 83.8% of the teachers, as shown in Table 29, considered themselves more enthusiastic about their teaching.

**Table 30.** Total Teacher Questionnaire Rankings of 12 Items, Grades K-3 (Percentages) 2000-01

ITEM	Ranking*
1. More time teaching	17
2. Covered more content	5.4
3. Integrated content	4.3
4. More depth	6.0
5. Individualization	22.1
6. More engaging	12.5
7. More Hands-on	9.7
8. Student's knowledge	4.3
9. Problem solving	6.0
10. Cooperative groups	3.0
11. More opportunities	2.1
12. Teacher enthusiasm	7.7

N=369

\*Average ranking of top three choices from the list of 12 items.

**Table 31.** Teacher Questionnaire Results for Kindergarten, First, Second, and Third Grade (Percentages) 2000-01

	Kindergarten (N=84 )					First Grade (N=88)				
	SD	D	S	A	SA	SD	D	S	A	SA
1	2.4	0	6.0	35.7	56.0	1.1	1.1	11.4	44.3	36.6
2	0	1.2	6.0	33.3	59.5	0	1.0	9.1	44.4	45.5
3	0	0	7.1	39.3	53.6	0	0	9.1	60.2	30.7
4	0	0	8.3	39.3	52.4	0	0	17	44.3	38.6
5	0	1.2	4.8	20.2	73.8	0	1.1	5.7	37.5	55.7
6	0	0	11.9	20.2	67.9	0	1.1	9.1	30.7	59.1
7	0	0	3.6	27.4	69.0	0	1.1	10.2	54.5	34.1
8	0	2.4	4.8	50.0	42.9	0	2.3	15.9	46.6	35.2
9	0	1.2	7.2	42.2	49.4	0	1.1	12.5	55.7	30.7
10	0	1.2	15.5	40.5	42.9	0	3.4	21.6	37.5	37.5
11	0	0	17.9	35.7	46.4	0	3.4	20.5	50.0	26.1
12	0	0	3.6	23.8	72.6	0	0	9.1	26.1	64.8
	Second Grade (N=83)					Third Grade (N=93)				
	SD	D	S	A	SA	SD	D	S	A	SA
1	0	2.4	10.8	38.6	48.2	0	4.3	8.6	37.6	49.5
2	0	1.2	8.3	41.7	48.8	0	4.3	14.0	39.8	41.9
3	0	1.2	4.8	58.3	35.7	0	2.2	15.1	46.2	36.6
4	0	1.2	10.7	45.2	42.9	0	3.2	12.9	44.1	39.8
5	0	1.2	1.2	40.5	57.1	0	2.2	6.5	26.9	64.5
6	0	0	3.6	34.5	61.9	0	2.2	3.2	34.4	60.2
7	0	2.4	6.0	38.1	53.6	0	2.2	15.1	40.9	41.9
8	0	0	13.1	53.6	33.3	0	2.2	14.0	51.6	32.3
9	0	1.2	9.5	40.5	48.8	0	2.2	10.8	47.3	39.8
10	0	3.6	15.5	38.1	42.9	0	3.2	15.1	48.4	33.3
11	0	4.8	19.0	46.4	29.8	0	4.3	24.8	49.5	20.4
12	0	1.2	8.3	25.0	65.5	0	2.2	8.6	28.0	61.3

**Key**

SD = Strongly Disagree D = Disagree S = Sometimes A = Agree SA = Strongly Agree

Teacher behavior by grade levels for first-, second-, and third-grade classrooms is reported in Table 31, and teacher behavior by type of SAGE classroom for these grade levels is reported in Table 32. It can be seen that the general pattern of ratings in the low and high groups of teaching behaviors as shown in Table 29 is also descriptive of each grade level and each type of classroom. For example, across the three grade levels, items *teacher enthusiasm*, *individualization*, and *more engaging* received ratings in the high group and items *more cooperative groups* and *more opportunities* were less likely to receive ratings in the high group than other items. However, as indicated in Table 31, some trends revealed by teacher responses of different grade levels are noteworthy. Findings by grade show that first-grade teachers appear less likely than Kindergarten, second-grade, and third-grade grade teachers to allocate ratings of strong agreement for the items of *spend more time teaching rather than managing the classroom*, *involve students in more hands-on activities*, and *more often involve students in problem solving, creating, and experimenting*. Third-grade teachers appear less likely than Kindergarten, first-grade, and second-grade teachers to give ratings in the high group to the item *offer students more opportunities to choose among learning activities*.

This year five types of SAGE classroom configurations were reported by schools for Kindergarten, first-, second-, and third-grade classrooms: 15:1 regular reduced size; 15:1 shared space; 30:2 team taught; 30:2 classes with a floating teacher for reading, language arts, and math instruction, and classes with a full time and a part time teacher. The predominant type of classroom organization was 15:1 followed by team taught classes. In a few classrooms, different types of organization were used such as shared space, a floating teacher, and a full time/part time organization. As indicated in Table 32, the general pattern of ratings in the high and low groups of teaching behaviors also holds true for the findings by type of SAGE classroom. In Table 32, the results for floating teacher and full/part time teacher are combined under other types because both types reduce class size in similar ways.

**Table 32.** Teacher Questionnaire Results for Different Types of SAGE Classrooms (Percentages\*) in Grades K-3 in 2000-01

	Regular 15:1 N=213					Team Taught 30:2 N=93					Shared Space 15:1 N=25					Other Types N=24				
	SD	D	S	A	SA	SD	D	S	A	SA	SD	D	S	A	SA	SD	D	S	A	SA
1	1	1	7	43	49	2	7	13	28	51	0	0	20	32	48	0	0	4	46	50
2	0	1	10	40	48	0	4	10	42	44	0	0	8	28	64	0	0	0	50	50
3	0	0	7	53	40	0	3	14	50	33	0	0	8	44	48	0	0	13	46	42
4	0	1	12	44	43	0	3	18	37	42	0	0	8	52	40	0	0	4	46	50
5	0	1	4	31	64	0	4	8	26	62	0	0	4	48	48	0	0	0	25	75
6	0	0	5	28	68	0	3	13	34	50	0	0	4	32	64	0	0	0	38	63
7	0	0	8	42	50	0	5	11	37	47	0	0	4	48	48	0	0	17	25	58
8	0	1	10	47	41	0	3	17	52	28	0	0	0	72	28	0	0	8	50	42
9	0	1	10	48	41	0	4	13	42	40	0	0	0	52	48	0	0	13	33	54
10	0	2	16	42	40	0	5	20	38	37	0	0	16	44	40	0	0	17	42	42
11	0	0	20	47	33	0	9	26	43	23	0	4	20	48	28	0	4	17	38	42
12	0	0	6	28	66	0	3	13	23	61	0	0	8	24	68	0	0	0	25	75

SD = Strongly Disagree D = Disagree S = Sometimes A = Agree SA = Strongly Agree

\*Percentages may not always equal to 100 due to rounding.

In the Teacher Questionnaire, teachers also report their perceptions about student participation. Ninety-four percent of the teachers agree or strongly agree that students *participate more in class* and *are more apt to ask for help*. Eighty-six percent of the teachers see their students as *more attentive* and *more enthusiastic about tasks*, and 77% of the teachers see their students *displaying more self-direction*. These findings are consistent with findings from previous years.

Principals, in the Principal Questionnaire (Appendix F), also provide estimates of the reduced class size effect on teaching. They present the same picture of teaching as revealed by the classroom studies and the Teacher Questionnaire. Individualization, diagnosis of student strengths and weaknesses, treatment of learning problems, assessment of progress and proactive interventions, immediate feedback, and an environment of human relationships conducive to learning are frequently mentioned. One principal commented in the following way:

Smaller class size has promoted flexible grouping of students, more individualized instruction and explicit strategic instruction. Teachers use performance tasks and authentic assessments which inform instruction. Teachers are responsive to students' learning needs.

*Comments from principals at three other schools further illustrate the opportunities provided by reduced-size classes:*

Our teachers have time to provide more one-on-one and small group instruction to our students. More re-teaching can take place in the classroom.

Students are provided with a great deal more individualized attention and assistance as needed on a regular basis. This can be counted on as the norm .... Teachers have gotten to know each of their children better as an individual, socially, emotionally and academically and have been better able to program for and teach to their needs.

Management and discipline is easier. Parent communication and involvement has increased and improved. Students can participate more frequently in discussion and have more opportunities to read orally. Teachers have time to enrich as well as prepare remedial work.

*A number of principals commented on the effect of SAGE on students with special educational needs (SEN). One principal mentioned that more inclusion of EEN and at risk students into regular classrooms is occurring which has resulting in "higher achievement by EEN students due to exposure to more challenging content and positive peer models and more tolerant behavior observed from all students." Furthermore, principals stated that smaller classes have had a positive effect on the overall climate of the building and communication with parents.*

### Rigorous Curriculum

For the purposes of the SAGE evaluation, rigorous curriculum has been defined as curriculum that is consistent with national standards in reading, language arts and mathematics as proposed by professional associations. Table 33 reports the extent to which the curriculum in the areas of reading, language arts and mathematics in SAGE schools is consistent with these standards. These data, derived from teacher perceptions on the Teacher Questionnaire, show overall agreement with the standards in both curriculum areas.

In reading and language arts, the areas of greatest agreement are a) students are encouraged to choose books of personal interest, b) the names of parts of books are taught, c) students are taught to apply a variety of decoding strategies, and d) students are introduced to texts that deal with topics relevant to the real world. The areas of least agreement are a) students are taught to critique non-print media, b) students are taught to critique print texts, c) students are taught to categorize texts by author, and d) and students are taught to categorize texts by topic or theme.

In mathematics, the areas of greatest agreement are a) students have the opportunity to connect mathematics to everyday situations, b) students have the opportunity to connect mathematics with other subject areas, c) mathematical language and symbols are introduced in the context of exploration and are related to students' everyday language, and d) using estimation and learning about enumeration through concrete experiences. The areas of least agreement are a) development of own strategies for solving mathematics problems, and b) writing of own mathematics problems, c) usage of calculators in appropriate situations, and d) instruction includes concrete experiences with metric units.

Teacher perceptions concerning rigorous curriculum are very similar to prior years, with greater agreement in reading and language arts than in mathematics. The areas of greatest and least agreement within both curricular areas are nearly identical to previous year's findings.

**Table 33.** Rigorous Curriculum, Grades K-3 (N, Mean, and Standard Deviation)

	N	Mean*	SD
<b>Reading/Language Arts</b>			
Students introduced to texts: represent range of genres	406	4.19	.66
Students introduced to texts: represent range of historical	405	3.55	.79
Students introduced to texts: deal with topics relevant to real world	406	4.15	.61
Students introduced to texts: variety of ethnic, culture contexts	405	4.07	.73
Students taught to apply variety of decoding strategies	408	4.6	.58
Students introduced to variety of interpretative strategies	403	3.98	.81
Students taught names for parts of books	408	4.74	.49
Students introduced to literature terminology	408	4.52	.68
Students taught to categorize texts: fiction or non-fiction	408	4.2	.85
Students taught to categorize texts: topic or theme	394	4.0	.86
Students taught to categorize texts: author	304	3.97	.89
Students taught to make associations among texts	406	3.87	.76
Student taught aware of how language can be purpose adjusted	407	3.74	.77
Students taught aware of how language can be audience adjusted	407	3.51	.83
Students encouraged to choose books interested in reading	410	4.78	.45
Students apply lang/conventions: critique/discuss print texts	401	3.55	.94
Students apply lang/conventions: critique/discuss non-print media	398	3.25	.96
Students apply lang/conventions: writing to develop interests	403	4.09	.74
Students apply lang/conventions: speaking to develop interests	404	3.9	.79
<b>Mathematics</b>			
Students write own mathematics problem about real or imaginary	402	3.42	2.14
Students encouraged to develop own strategy for solving problems	408	4.19	2.16
Opportunity to investigate open problems have more than one sol.	408	3.86	.80
Write in math class to reflect and demonstrate understanding	407	3.51	.94
Mathematics language and symbols introduced in context of explorations	406	4.17	.65
Opportunities to make connections between mathematics and other subject areas	407	4.14	.59
Opportunities to make connections between math & everyday situations	409	4.25	.59
Estimation when working with quantities, measurement, computation	409	3.83	.70
Opportunity to explore and use estimation strategies in real situations	408	3.68	.73
Learn enumeration through concrete experiences	409	4.23	.70
Discuss, model, draw, write about their understanding	408	.98	.81
Instruction of facts emphasize development of thinking strategies	406	4.11	.75
Develop own computation strategies and algorithms	403	3.68	1.00
Calculators used in appropriate situations	404	2.73	1.24
Instruction includes concrete experiences with metric units	406	3.23	1.05
Concepts of perimeter, area, volume are developed	405	3.36	.94

Opportunity to explore geometric shapes through concrete exp.	406	3.88	.71
Opportunity to work with 3-dimensional figures	405	3.65	.78
Formulate & solve problems involving collecting & analyzing data	405	3.79	.76
Make predictions, inferences, decisions from data	406	3.9	.71
Concept of chance explored by collection of data and other events	406	3.31	.87
Concrete and real experience to develop fraction concepts	405	3.75	.83
Recognize, describe, extend patterns	407	4.17	.74
Create patterns using materials and discuss patterns	407	4.05	.79

\*Mean score using five point Likert Scale

The Principal Questionnaire results support the finding that the reading and language arts curriculum and the mathematics curriculum generally are consistent with national standards. All of the SAGE principals see their reading/language arts curriculum as being mostly or completely compliant in these areas, as seen in Table 34. Ninety percent of the principals regard their mathematics curriculum as mostly or completely compliant with national standards.

**Table 34.** Principals' Perceptions of Rigorous Academic Curriculum (Percentages)

	Not Implemented	Somewhat Implemented	Mostly Implemented	Completely Implemented
<b>Area</b>				
Reading/ Language Arts	0	0	63.3	36.7
Mathematics	0	10.0	56.7	33.3

N=30

### Professional Development

Results concerning general and personal professional development as perceived by SAGE principals and teachers are contained in Tables 48, 49 and 50. Principals' views of the professional development program in their schools are reported in Table 35. The results show that new teacher transitions, collaborative planning, professional development, and staff evaluation programs are generally being implemented in SAGE schools.

**Table 35.** Principals' Perceptions of Staff Professional Development Programs (Percentages)

	Not Implemented	Somewhat Implemented	Mostly Implemented	Completely Implemented
New teacher transition program	3.3	10.0	50.0	36.7
Collaborative planning	0	20.0	33.3	46.7
Professional development plans	0	3.3	73.3	23.3
Staff evaluation program	0	6.7	50.0	43.3

N=30

Table 36, which reports the *context*, *process*, and *content* of professional development in SAGE schools, shows that professional development is a prominent feature of SAGE schools. In terms of context, most teachers (50% or more) agree that in their school staff development is an ongoing and regular component, is widely supported, adequately funded, and brings about changes in classroom practices. In terms of process, most teachers agree that in their school the learning climate of staff development is collaborative; the teacher is seen as a learner; and the school's improvement plan addresses decision making, communication, and team functioning. In terms of content of professional development at their schools, teachers report high agreement in the area of child learning and development; knowledge, attitude, and skills needed for quality education; knowledge of effective approaches to teaching; use of strategies that demonstrate high expectations; performance assessment with a focus on what students can actually do; and parent/staff communication with a focus on the school's goals and curriculum.

**Table 36.** Teachers' Perceptions of Professional Development Grades K-3 (Percentages\*)

Item	Strongly Disagree	Disagree	Sometimes	Agree	Strongly Agree
1. Ongoing & Regular	1.4	2.7	14.7	40.1	39.9
2. Changes in Practice	0.2	4.8	27.3	46.1	20.8
3. Adequate Funding	5.6	11.8	28.0	36.2	16.4
4. Widespread Support	2.2	11.1	26.3	40.8	18.1

5. Joint Learning	9.4	35.0	27.8	20.0	6.3
6. Study Groups	10.9	21.0	36.0	23.9	7.0
7. Improvement Plan	2.2	7.5	29.0	43.7	15.7
8. "Teacher as Learner"	1.0	6.3	24.6	45.4	20.3
9. Staff Development	1.0	5.6	20.5	48.6	23.2
10. Precede Decisions	1.7	15.9	39.6	34.3	6.8
11. Program Evaluation	1.4	11.1	39.1	38.4	7.7
12. Staff Development Activities	1.7	15.9	38.4	33.8	8.5
13. Teachers Knowledgeable	0.5	1.9	10.1	49.5	36.0
14. Ensure Quality	0.5	1.4	8.0	47.1	41.5
15. Effective Approaches	0.0	1.4	12.3	56.3	28.5
16. Strategies	0.0	1.2	11.4	50.2	35.5
17. Focus on Goals & Curriculum	0.2	2.2	18.6	46.1	31.2
18. Performance Assessments	0.5	4.3	17.6	55.1	20.5
19. Staff Development for reduced class sizes	4.3	13.3	38.4	29.5	11.8

N=414

(\*Percentages may not always total to 100% due to incomplete reports submitted by teachers.)

Areas of professional development in which there is some disagreement by teachers are the use of study groups to learn about change and innovations; out-of-school collaborative learning; learning about innovations prior to deciding about their use; assessing teachers based on student learning; and development activities that include theory as well as practice. Teacher responses also indicate a need for staff development activities that specifically target teaching strategies for reduced size classes.

Teacher views of their own professional development, as reported in Table 37, show that slightly more than half of the teachers have a personal, written professional development plan. For those who have a personal development plan, in almost all cases, it is developed by the teachers themselves or in consultation with a school administrator. The results also show that most teachers collaborate in planning activities, delivering lessons, evaluating students, and in school-wide instructional initiatives. Further, teachers attend conferences and take improvement courses. Few SAGE teachers, when compared to other activities, attend a workshop or seminar specifically targeted for teaching small classes. This is probably the case because courses with this focus may not be available at the present time.

**Table 37.** Teachers' Perceptions of Their Personal Professional Development (Percentages)

Question #20 <i>Over the past year, I have...</i>	N	Percent Yes
Engaged in a mentoring relationship with another teacher.	412	41.5
Participated in joint planning activities with other SAGE teachers.	412	91.5
Collaborated with other teachers in delivering lessons.	412	85.2
Collaborated with other teachers in evaluating student progress.	412	88.3
Participated in a study group or on-line network.	411	26.5
Collaborated in school-wide instructional initiatives or themes.	412	71.4
Collaborated with other schools or institutions.	411	38.0
Conducted research connected to my teaching.	410	35.4
Attended a professional conference or skill-building workshop.	412	83.3
Attended a workshop, seminar or retreat focused on diversity or human relations training.	411	23.8
Attended a workshop, seminar or retreat focused on teaching smaller classes.	411	16.5
Taken a course for graduate of CEU credit.	412	52.7
<b>Question 21</b> <i>Do you have a personal formal, written professional development plan?</i>	412	53.9
<b>Question 22</b> <i>Which of the following statements most accurately reflects the content of your professional development plan?</i>		
It was determined primarily by me	223	70.9
It was determined in consultation with school administrators.	222	26.6
It was determined in consultations with district administrators.	222	4.1
It was determined primarily by school and /or district administrators	222	11.7

### Family Involvement and Lighted Schoolhouse

The extent to which SAGE school parents are involved in education of their children is reported in Table 38. The results of the Teacher Questionnaire show that teacher-parent contacts continue to occur mostly through teacher notes, teacher and parent conversations, and telephone calls. The use of weekly progress reports requiring a parent signature has increased since the early years of SAGE, and the use

of weekly progress reports in SAGE schools has more than doubled compared to its reported use in 1996-97 and in 1997-98.

Principal comments in the principal questionnaire generally affirm increased and improved communication with parents. The principal of one school explains:

Teachers know parents and family situations better. Parents are more comfortable in sharing information that may affect their child's interaction in the educational setting. Parents actively volunteer and participate more in the classroom.

Another principal makes the following comments:

*Teachers are better able to get to know their students and families. Our population is mobile and having SAGE-size classes is a great benefit to having time to meet with and contact parents, especially for less stable [or] mobile families. Conferences/contacts are more frequent which helps parents feel more comfortable with school and to have a solid understanding of their child's learning.*

**Table 38.** Teacher Questionnaire Results for Family Involvement (Percentages)

Item	1996-97 (N=212)	1997-98 (N=315)	1998-99 (N=417)	1999-00 (N=410)	2000-01 (N=413)
Class Newsletter	71	62	62	64	55
Weekly progress report-requiring parent signature	24	28	54	62	61
Weekly progress report-not requiring parent sig.	11	12	50	48	48
Notes sent home	98	93	95	95	96
Conversations with parents	95	94	95	97	97
Parental visits to school	74	76	71	74	74
Telephone calls	92	89	91	94	95
Home visits	10	14	12	13	13

School-wide opportunities for family involvement reported by principals are shown in Table 39. As over the past two years, the 2000-01 data on lighted schoolhouse activities were collected directly from the school principals rather than through the Department of Public Instruction, which was the case in 1996-97 and 1997-98. The data in Table 39 are based on 29 completed questionnaires.

**Table 39.** SAGE Schools' Lighted Schoolhouse Participation (N=29)

Activity	Number of Schools Reporting the Activity	Range of Participants in Each Activity	Total Number of Annual Participants
Child Care	13	15-100	622
Health Clinic	5	60-150	539
Breakfast	24	50-500	4268
Tutoring	23	6-150	1235
Homework Help	16	22-250	1337
Extended Library	13	6-1200	2677
Adult Recreation	20	15-1000	2573
Girl and Boy Scouts	24	8-300	1536
Music Lessons	14	10-120	535
Summer Reading	17	25-200	1508
Head Start	6	4-100	279
Social Services	6	5-320	800
Family Resource Center	11	2-320	1122
Technology Education	7	25-574	1069
GED Preparation	2	2-38	40
PTA/PTO	23	2-800	2502
Family Literacy	6	15-500	646
Parent Advisory	11	3-30	168

Principals also reported a number of additional activities well attended by SAGE families, such as open house, family fun night, holiday dinners, cribbage night, and sock hops. A variety of special activities such as reading nights, career exploration days, 4H clubs, science fairs, summer math, computer classes, book fairs, ballet, cheerleading, ceramic and sculpture classes, and health fairs were also reported. Students also participated in science, art, sign language, and nature clubs.

## MAJOR FINDINGS AND DISCUSSION 2000-2001

The Student Achievement Guarantee in Education (SAGE) program is a statewide effort to increase the academic achievement of children living in poverty by reducing the student-teacher ratio in kindergarten through third grade to 15:1. Schools participating in the SAGE program are also required to implement a rigorous academic curriculum, to provide before- and after-school activities for both students and community members, and to implement professional development and accountability plans. The SAGE evaluation is being conducted under contract with the Department of Public Instruction by the School of Education at the University of Wisconsin–Milwaukee.

During the 1996–97 school year, SAGE was implemented in 30 schools located in 21 school districts throughout the state of Wisconsin. It encompassed 80 kindergarten classrooms, 96 first-grade classrooms, and 5 mixed-grade classrooms enrolling 1,494 kindergarten and 1,723 first-grade students. Although SAGE was implemented in kindergarten classrooms, students in kindergarten were not tested. The effect of SAGE on kindergarten students is determined when they are tested as first-grade students the following year. In 1997-98, the SAGE evaluation added 1,541 students in 113 second-grade classrooms in the original 30 SAGE. In 1998-99, the SAGE evaluation was made up of 85 kindergarten, 89 first-grade, 83 second-grade and 88 third-grade classrooms enrolling 1,416 kindergarten, 1,525 first-grade, 1,446 second-grade and 1,531 third-grade students. In 1999-00, first-grade students were not evaluated. The 1999-00 SAGE evaluation was made up of second-grade and third-grade classrooms enrolling 1,636 and 1,611 students respectively. In 2000-01 first-grade and second-grade students were not tested. The 2000-01 SAGE evaluation involved 1,542 third-grade students in 93 SAGE classrooms.

To measure academic achievement, third-grade students in SAGE schools and in a group of Comparison schools were administered the Comprehensive Test of Basic Skills (CTBS)\* Complete Battery, Terra Nova edition, Level 13, Form A in the spring of 2001. Following is a summary of the major findings of (1) the achievement effect of class size reduction, (2) the analysis of SAGE classrooms and schools, and (3) questions for future analysis and discussion.

\*This year the Milwaukee Public Schools adopted the Basic Multiple Assessments Plus test to test all third-grade students in the district. To avoid compromising the testing for both the SAGE Evaluation Project and the Milwaukee Public Schools, an agreement was reached to have the third-grade SAGE students in the Milwaukee Public Schools take the Basic Multiple Assessments Plus test during the SAGE testing window. The Basic Multiple Assessments Plus test contains more subtests than the Comprehensive Test of Basic Skills (CTBS) used in the SAGE Evaluation; however, both tests are Level 13 Form A and are on the same scale.

### The Achievement Effect of Class Size Reduction

#### Third Grade, 2000-01

- The SAGE achievement advantage persists. When scores are adjusted for pre-existing differences in socioeconomic status, ethnicity, attendance, and prior knowledge, a SAGE advantage from the beginning of first grade to the end of third grade is shown on all subtests. From the end of first grade to the end of third grade, a SAGE advantage is shown on all subtests. From the end of second grade to the end of third grade, a SAGE advantage is shown in the third-grade reading subtest (Pages 32-33, Tables 18-20).
- Adding students lowers the average performance of classrooms. Each student added to a classroom beyond the 15:1 SAGE student-teacher ratio results in a decrease of approximately one scale score point in the class average in all academic scores (Page 40, Tables 24-26).
- No significant differences in achievement gains were found between 15:1 and 30:2 classrooms (Page 43).

### The Analysis of SAGE Classrooms and Schools

Findings regarding teaching from the 2000-2001 SAGE evaluation obtained from interviews and observations in selected second- and third-grade classrooms as well as data from the teacher and the principal questionnaires administered in all SAGE Schools reaffirmed and amplified previous findings.

- The major effect of reduced class size is increased individualization. When teachers have fewer students, they can attend to the needs of each student because they have greater knowledge of each student, they have more time for instruction resulting from reduced time spent on discipline, and they have greater enthusiasm for their work.
- The type of individualization that reduced class size engenders is increased teacher-student interaction in one-on-one situations, in small group tutoring, or in total class teaching. The understandings of individual students are constantly being elicited, displayed, and critiqued.
- In higher-achieving second- and third-grade classrooms, as in higher-achieving first-grade classrooms, the amount and type of individualization differ from those found in lower-achieving classrooms. Teachers in higher-achieving classrooms stress a full range of goals but emphasize the acquisition of basic knowledge and skills, mostly through the use of explicit instruction. Time spent on instruction is maximized because a structured management system based on rules and routines is used and lessons are carefully planned and paced.
- In lower-achieving second- and third-grade classrooms, as in lower-achieving first-grade classrooms, the amount and time, and, in some cases, the type of individualization differs from that of higher-achieving classrooms, chiefly because of the student and lesson management that is used. All of the lower-achieving classrooms tended to use more permissive student management techniques and often displayed emergent, randomly sequenced lessons. Generally, first-grade teachers focused on more personal goals using experiential learning. Teachers in lower-achieving second- and third-grade classrooms had goals and used methods more similar to the higher-achieving teachers.

#### Questions for Future Analysis and Discussion

Taken together, findings and analyses of student achievement and classroom data over the five-year span of the SAGE evaluation project point to a number of questions to be addressed in future studies:

- Does student mobility have a significant impact on achievement performance of students in SAGE classrooms?
- Does specialized professional preparation of teachers have an impact on the academic performance of classrooms?
- What types of staff development programs are most likely to augment the benefits of class size reduction?
- What are the lasting benefits to students of participation in the SAGE program in the early elementary grades?

## REFERENCES

- Bingham, S. C. (1993). *White-minority achievement gap reduction and small class size: A research and literature review*. Nashville, TN: Center of Excellence for Research and Policy on Basic Skills.
- Bohrnstedt, G.W., Wiley, E.W., & Stecher, B.M. (2000). The California class-size reduction evaluation: Lessons learned. *The CEIC Review*, 9(2), 11.
- Boyd-Zaharias, J. and Pate-Bain, H. (2000). Early and new findings from Tennessee's project STAR. In M.C. Wang and J.D. Finn (Eds.), *How small classes help teachers do their best* (pp.65-97). Philadelphia, PA: Temple University Center for Research in Human Development and Education, and the U.S. Department of Education.
- Bryk, A. & Raudenbush, S. (1992). *Hierarchical linear models*. Newbury Park, CA: SAGE Publications, Inc.
- CTB/McGraw-Hill (1991). *Comprehensive test of basic skills* (4<sup>th</sup> ed.). CA: Macmillan/McGraw-Hill.
- Cohen, J. (1977). *Statistical Power Analysis for the Behavioral Sciences* (rev. ed.). New York: Academic Press.
- Egelson, P., Harman, P., & Achilles, C.M. (1996). *Does class size make a difference? Recent findings from state and district initiatives*. Greensboro, NC: Southeastern Regional Vision for Education (SERVE).
- Finn, J. D., Gerber, S. B, Farber, S. F.; & Achilles, C.M. (2000). Teacher aides: An alternative to small classes? *The CEIC Review*, 9(2), 5.
- Glass, G., & Smith, M. (1978). *Meta-analysis of research on relationship of class-size and achievement*. San Francisco, CA: Far West Laboratory for Educational Research and Development.
- Grissmer, D. (1999). Class size effects: Assessing the evidence, its policy implications, and future research agenda. *Educational Evaluation and Policy Analysis*, 21(2), 231-248.
- Hanushek, E. A. (1999). Some findings from an independent investigation of the Tennessee STAR experiment and from other investigations of class size effects. *Educational Evaluation and Policy Analysis*, 21(2), 143-163.
- Hruz, T. (1998). Beyond smoke and mirrors: A critical look at smaller class sizes. *Wisconsin Interest*, 7(2), 29-37.
- Krueger, A. B. (2000). An Economist's view of class size research. *The CEIC Review*, 9(2), 19-20.
- Mosteller, F. (1995). The Tennessee study of class size in the early school grades. *The Future of Children*, 5, 113-127.
- Pate-Bain, H., Achilles, C. M., Boyd-Zaharias, J., & McKenna, B. (1992). Class size does make a difference. *Phi Delta Kappan*, 74(3), 253-256.
- Smith, P. & Kritek, W. (1999). *The effects of class size on student achievement: A closer look at conventional wisdom*. Report prepared for the Institute for Excellence in Urban Education, University of Wisconsin-Milwaukee, School of Education.
- U. S. Department of Education and the Laboratory for Student Success. (1999). *How small classes help teachers do their best*. Commissioned papers for the National Invitational Conference "How Small Classes Help Teachers Do Their Best" held on December 6-7, 1999 in Washington, DC.
- U.S. Department of Education. (2000). *The class-size reduction program: Boosting student achievement in schools across the nation – A first-year report*. Jessup, MD: Editorial Publications, U.S. Department of Education.
- Viadero, D. (1998). Small classes: Popular, but still unproven. *Education Week*. Available: <http://www.edweek.org/ew/vol-17/23class.h17>.
- Wenglinsky, H. (1997). *When money matters*. Princeton, NJ: Educational Testing Service.

## Appendix A

**2000-2001 SAGE Classroom Studies****Teacher and Classroom Background Information**

Teacher: \_\_\_\_\_ School: \_\_\_\_\_

1. Type of SAGE Classroom: \_\_\_\_\_ Grade Level: \_\_\_\_\_

Class enrollment: 2000-01 \_\_\_\_\_ 1999-00 \_\_\_\_\_ 1998-99 \_\_\_\_\_ 1997-98 \_\_\_\_\_

Class Composition 00-01:

- a) Number of Special Education Students (indicate special needs area):

\_\_\_\_\_

- b) Please select the grade appropriate table and provide the information for your students.

<b>Second Grade Students</b> <i>Years of Attendance in SAGE</i>	<i>Number of Students</i>
1. Kindergarten only	
2. First Grade only	
3. Both Kindergarten & First Grade	

<b>Third Grade Students</b> <i>Years of Attendance in SAGE</i>	<i>Number of Students</i>
1. Kindergarten only	
2. First Grade only	
3. Second grade only	
4. Kindergarten & First Grade	
5. Kindergarten & Second Grade	
6. First Grade & Second Grade	
7. Kindergarten, First, & Second Grade	

2. Teacher Background: Certification \_\_\_\_\_ Majors/Minors \_\_\_\_\_

Reading License: \_\_\_\_\_ Degrees: \_\_\_\_\_

Inservice/Workshops: \_\_\_\_\_

Other: \_\_\_\_\_

3. Teaching Experience: \_\_\_\_\_

How many years in current grade level? \_\_\_\_ How many years at this school? \_\_\_\_

4. Please tell us about other adults (reading specialist, parent volunteer, instructional aide, etc.) who help with reading and/or math instruction for your students.

Name & Title of Adult	Reading			Math		
	How many times per week	How many minutes <u>each</u> time	Number of students involved	How many times per week	How many minutes <u>each</u> time	Number of students involved
1.						
2.						
3.						
4.						
5.						

Other information about helpers for students:

---

## Appendix B

### Introductory Interview

Teacher \_\_\_\_\_ School \_\_\_\_\_ Date \_\_

1. What are your overall goals for your students? At the end of this grade what student outcomes do you hope will be realized? Please identify 4 or 5 of your main student goals.

Probes/extensions:

- Which goals do you believe are most important? Rank the goals.
- To what extent would these goals have been on your list prior to having a small class? Which goals, if any, are specifically related to having a small class?
- Which of these two sets of goals is *more* like the goals you have for students?

<u>Set One</u> Basic skills Foundational knowledge Academics Facts and concepts	<u>Set Two</u> Personal development Critical thinking Decision making Problem solving Self-control
---	---

2. What is your preferred style of teaching? What methods, techniques, behaviors, etc., do you prefer to use with your students? Please describe the main aspects of your preferred way to teach.

Probes/extensions:

- Of these aspects of your preferred teaching, which single aspect most clearly illustrates your way of teaching? What most epitomizes your way of teaching?
- To what extent was this your preferred way to teach prior to having a small class? Which aspects of your preferred teaching are specifically related to having a small class?
- Which of these two sets of methods or ways of teaching is *more* like your preferred way to teach?

<u>Set One</u> Teacher directed and controlled Explicit teaching Modeling providing practice Checking understanding	<u>Set Two</u> Student directed and controlled Hands-on experimenting Problem solving Student-selected content Independent learning
--	--

3. How has having a small class *most* changed your role in your classroom? What are the *main* things you do now that you could not do to the same extent prior to having a small class?

## Appendix C

### Second Interview

Teacher \_\_\_\_\_ School \_\_\_\_\_ Date\_\_

- How do you teach mathematics to your students? Describe your program of mathematics instruction.  
Probes/extensions:
  - What re *your* goals/objectives? (Which do you stress more: computational skill or conceptual understanding?)
  - What program or materials does your district use? What are its features? Do you like the program? Why?
  - What are your main teaching methods? (How do you organize a mathematics lesson? What happens first, second etc?)
- How do you teach reading to your students? Describe your program of reading instruction.  
Probes/extensions:
  - What are *your* goals/objectives? (What do you stress more: decoding skill and vocabulary or comprehension and interest in reading?)
  - What program or materials does your district use? What are its features? Do you like the program? Why?
  - What are your man teaching methods? (How do you organize a reading lesson? What happens first, second, etc?)
- What kind of student management do you believe should be used with the grade you teach? Describe what teachers should do and not do to maintain student attention, reduce disruptions, develop a healthy atmosphere, etc.  
Probes/extensions:
  - Describe a classroom situation which most clearly illustrates the kind of student management you prefer.
  - To what extent did you use this type of management prior to having a small class? Which aspects of your student management are specifically related to having a small class?

<u>Set One</u> Teacher-directed management Firmness Decisiveness Consistency Assertiveness	<u>Set Two</u> Student self-management Freedom Empathetic
---	--

4. What kind of lesson management do you believe should be used with the grade you teach? Describe what usually makes a lesson successful and what often makes a lesson flop.

Probes/extensions

- What aspects of lesson management do you believe are the most important?
- To what extent did you use this type of lesson management prior to having a small class? Which aspects of your lesson management are specifically related to having a small class?
- Which of these two sets of lesson management characteristics is *more* like the lesson management you use?

<p><u>Set One</u>            Specific goal focused            Brisk pace            Planned in detail            Organized and sequenced            Linear</p>	<p><u>Set Two</u>            Planned in general            Spontaneous            Creative            Divergent            Interest driven</p>
--	--

5. How do you individualize your instruction? Describe what you do to meet individual needs in your classroom.

Probes/extensions:

- Would you say you are more active (plan programs for individuals, prepare special materials for individuals, teach to specifics individual needs, etc.) or more reactive (respond to expressed individual needs in a spontaneous manner, pursue individuals' interests as they are revealed, give individuals choices, etc.) in your individualization?
- To what extent is permitting or requesting students to show their understandings, display their skills, voice their thoughts, etc. a major aspect of your individualization? Why? What do you typically do?
- To what extent is reacting to student classroom responses with critique, feedback, corrections, challenge, etc., a major aspect of you individualization? Why? What do you typically do?

#### Appendix D

#### **Reading/Mathematics Observations**

##### Directions

- Observe in *reading* (not language arts or separate phonics) and *mathematics*.
- Observe for the complete class session.
- Obtain copies of all distributed photocopied papers, directions, materials, etc.
- Obtain titles, etc., of all published materials used.
- Informally interview the teacher if clarification about the observations is needed.

##### Guide

What's going on? *Describe* the events of the lesson in detail. Focus on the following:

- Objectives of the lesson (stated or inferred).  
Basic skills? Critical thinking?
- Content and skills, breadth and depth.
- Learning activities/teacher behavior (verbatim talk).

Explicit teaching? (Informing, modeling, checking, etc.)	Self-directed learning? (Problem solving, hands on, etc.)

4. Individualization
- Time spent in total class, small groups, one-on-one.
  - Time spent in student articulation (sharing, answering, showing, etc) and teacher critique (correcting, helping, challenging, reteaching, etc.).

5. Student management

Teacher directed?	Student self-management?
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6. Lesson management

Organized, focused, logical, brisk, high academic learning time?	Spontaneous, divergent, creative, relaxed, low academic learning time?
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7. Evaluation

#### Appendix E

#### SAGE Teacher Questionnaire Spring 2001

Teacher ID \_\_\_\_\_

#### A. Effects of Reduced Student - Teacher Ratio on Classroom Teaching

Please indicate the extent to which a reduced student - teacher ratio this year has changed your teaching practices compared to previous years when you had a normal size class.

**IF** this is your first year teaching, please use your student teaching experiences as a reference point for comparison.

**IF** your teaching experience has always been with a small class, please check here and go on to Part B. \_\_\_\_\_

In a small size class	<u>Strongly</u> <u>Agree</u>	<u>Disagr</u> <u>e</u>	<u>Some-</u> <u>times</u>	<u>Agree</u>	<u>Strongl</u> <u>y</u> <u>Agree</u>
1. I spend more time teaching rather than managing the classroom.	1	2	3	4	5
2. I cover more content.	1	2	3	4	5
3. I more often integrate content from several subjects.	1	2	3	4	5
4. I cover content in more depth.	1	2	3	4	5
5. I spend more time in individualized instruction, assessing learning, providing learning activities, and giving help.	1	2	3	4	5
6. I spend more time engaging students in discussion, encouraging them to share their ideas, and answering their questions.	1	2	3	4	5

7. I involve students in more hands-on activities.	1	2	3	4	5
8. I more often base activities on students' prior knowledge, understandings, and skills.	1	2	3	4	5
9. I more often involve students in problem solving, creating, and experimenting.	1	2	3	4	5
10. I more often organize the class into cooperative groups.	1	2	3	4	5
11. I offer students more opportunities to choose among learning activities and materials.	1	2	3	4	5
12. I am more enthusiastic about my teaching.	1	2	3	4	5

13. From the list above please select the three most significant ways your teaching has been affected by a reduced student-teacher rate.

a. \_\_\_\_\_ b. \_\_\_\_\_ c. \_\_\_\_\_

## B. Your Reading and Language Arts Curriculum

	<u>Never</u>	<u>Rarely</u>	<u>Sometimes</u>	<u>Often</u>	<u>Always</u>
1. In my classroom, students are introduced to texts:					
a. representing a range of genres.	1	2	3	4	5
b. representing a range of historical periods.	1	2	3	4	5
c. dealing with topics relevant to the real-world.	1	2	3	4	5
d. set in a variety of ethnic or cultural contexts.	1	2	3	4	5
2. My students are taught to apply a variety of decoding strategies (e.g., memorization, phonics, inference, etc.).	1	2	3	4	5
3. My students are introduced to a variety of interpretive strategies (e.g., literal, figurative, contextual, etc.).	1	2	3	4	5
4. My students are taught names for the various parts of books (e.g. author, illustrator, table of contents, etc.).	1	2	3	4	5
5. My students are introduced to literary terminology (e.g., plot, character, setting, etc.).	1	2	3	4	5
6. My students are taught to categorize texts by:					
a. fiction or non-fiction	1	2	3	4	5
b. topic or theme	1	2	3	4	5
c. author	1	2	3	4	5
7. My students are taught to make associations among various texts.	1	2	3	4	5
8. My students are taught to be aware of how language can be adjusted to communicate for different purposes.	1	2	3	4	5
9. My students are taught to be aware of how language can be adjusted to communicate to different audiences.	1	2	3	4	5

10. My students are encouraged to choose books they are interested in reading.	1	2	3	4	5
11. My students are taught to apply their knowledge of language, structure, and conventions (e.g., spelling, punctuation, grammar, and syntax) to:					
a. critique and discuss print texts.	1	2	3	4	5
b. critique and discuss non print media.	1	2	3	4	5
c. use writing to creatively develop and pursue their own interests.	1	2	3	4	5
d. use speaking to creatively develop and pursue their own interests.	1	2	3	4	5

### C. Your Mathematics Curriculum

	<u>Never</u>	<u>Rarely</u>	<u>Sometimes</u>	<u>Often</u>	<u>Always</u>
1. My students write their own math problems about real-world or imaginary situations.	1	2	3	4	5
2. My students are encouraged to develop their own strategies for solving problems and are given opportunities to discuss strategies with each other.	1	2	3	4	5
3. My students have opportunities to investigate open-ended problems that have more than one correct solution.	1	2	3	4	5
4. My students write in math class in order to reflect on and demonstrate their understanding of mathematical ideas and situations.	1	2	3	4	5
5. Mathematical language and symbols are introduced to my students in the context of explorations and are related to students' everyday language.	1	2	3	4	5
6. My students have opportunities to make connections between mathematics and other subject areas.	1	2	3	4	5
7. My students have opportunities to make connections between mathematics and everyday situations.	1	2	3	4	5
8. My students use estimation when working with quantities, measurement, and computation.	1	2	3	4	5
9. My students have opportunities to explore and use a variety of estimation strategies in real-world situations.	1	2	3	4	5
10. My students learn about our enumeration system through concrete experiences that relate to counting, grouping, and place-value concepts.	1	2	3	4	5

11. My students discuss, model, draw, and write about their understandings of the operations.	1	2	3	4	5
12. Instruction on basic facts emphasizes the development of thinking strategies.	1	2	3	4	5
13. My students are allowed to develop their own informal computation strategies and paper-and-pencil algorithms before, or instead of, learning the standard algorithms for addition and subtraction.	1	2	3	4	5
14. Calculators are used by my students in appropriate computation situations.	1	2	3	4	5
15. Instruction includes concrete experiences with metric units, as well as nonstandard systems of measurements that are meaningful to students.	1	2	3	4	5
	<u>Never</u>	<u>Rarely</u>	<u>Sometimes</u>	<u>Often</u>	<u>Always</u>
16. Concepts of perimeter, area, and volume are developed intuitively by counting units, covering surfaces, and filling containers.	1	2	3	4	5
17. My students have opportunities to explore the attributes of geometric shapes through concrete experiences.	1	2	3	4	5
18. My students have opportunities to visualize and work with three-dimensional figures to develop spatial skills.	1	2	3	4	5
19. My students formulate and solve problems that involve collecting and analyzing data.	1	2	3	4	5
20. My students make predictions, inferences, and decisions from displays of data.	1	2	3	4	5
21. The concept of chance (e.g., how likely or unlikely) is explored informally by discussing collections of data and other classroom and real-world events.	1	2	3	4	5
22. Instruction includes concrete and real-world experiences to help students develop fraction concepts.	1	2	3	4	5

23. My students have opportunities to recognize, describe, and extend a wide variety of patterns.	1	2	3	4	5
24. My students have opportunities to create patterns using various materials and to describe these patterns.	1	2	3	4	5

#### D. Effects Of Reduced Student-Teacher Ratio On Student Participation

Please indicate the extent to which reduced student-teacher ratio this year has changed student participation compared to previous years when you had a normal size class.

	<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Some-times</u>	<u>Agree</u>	<u>Strongly Agree</u>
1. Students are more attentive.	1	2	3	4	5
2. Students participate more in class discussions.	1	2	3	4	5
3. Students are more apt to ask for help.	1	2	3	4	5
4. Students are more enthusiastic about tasks.	1	2	3	4	5
5. Students are more self-directed.	1	2	3	4	5

#### E. Family Involvement

1. Please indicate the ways in which you **regularly** have contact with the parents (or guardians) of your students.

Check all that apply.

- a. Class newsletter.
- b. Folder or progress report for all students **requiring parent signature**.
- c. Progress report for all students not requiring parent signature.
- d. Notes sent home for individual students.
- e. Conversations with parents before/after school.
- f. Parental visits to school during classroom hours.
- g. Telephone calls to student's home.
- h. Home visits.
- i. Other (please specify).
-

2. The SAGE evaluation is looking at the relationship between student achievement and parent involvement. Specifically, the study is interested in before-and after-school activities which take place within your school and are attended by your students' parents.

Answer the questions to the best of your knowledge:

Total number of students in your classroom \_\_\_\_\_

Approximate number of your students whose parent(s) participate in the following:

parent/teacher conferences \_\_\_\_\_

volunteer activities in your classroom \_\_\_\_\_

school volunteer activities outside your classroom \_\_\_\_\_

open house \_\_\_\_\_

other school events and activities (please list) \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3. Do you see a relationship between student achievement and parents' involvement within the school building? If yes, please explain.

\_\_\_\_\_

\_\_\_\_\_

4. Do you think the relationship or lack of it relates at all to the SAGE program?

\_\_\_\_\_

\_\_\_\_\_

## F. Professional Development

Professional development questions are divided into two parts. The questions in **Part 1** ask for your opinion on professional development in your school and/or district in general. Questions in **Part 2** address professional development for you personally.

### PART 1. STAFF DEVELOPMENT IN YOUR SCHOOL/DISTRICT: CONTEXT, PROCESS AND CONTENT

In the following section please address the **context** for professional development in your school/district.

	Strongly Disagree	Disagree	Some-times	Agree	Strongly Agree
1. Staff development is ongoing and a regular part of my job.	1	2	3	4	5
2. Staff development activities result in changes in classroom practice for most teachers.	1	2	3	4	5
3. Adequate school/district funding is provided to support ongoing professional development.	1	2	3	4	5
4. There is widespread support for professional development among administration, teachers, parents, school board members, and other influential members of the community.	1	2	3	4	5
5. A minimum of twenty percent of the work week is devoted to joint learning and work with others outside the classroom.	1	2	3	4	5
6. School staff is organized into study groups to learn about the process of change in the school and/or about particular innovations.	1	2	3	4	5

In the following section please address the **process** of professional development in your school/district.

	<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Some times</u>	<u>Agree</u>	<u>Strongly Agree</u>
7. The school's improvement plan addresses such things as decision making, communication, and team functioning.	1	2	3	4	5
8. The principle of "teacher as learner" permeates staff development.	1	2	3	4	5
9. The learning climate of staff development is collaborative, informal, and respectful.	1	2	3	4	5
10. Staff reading, study, and discussion of educational innovations precede decisions concerning staff development.	1	2	3	4	5
11. Program evaluation assesses teachers' use of new knowledge and skills and the impact on student learning.	1	2	3	4	5
12. Staff development activities include theory, demonstration, practice with feedback, and coaching.	1	2	3	4	5

In the following section please address the **content** of professional development in your school/district.

	<u>Strongly Disagree</u>	<u>Disagree</u>	<u>Some times</u>	<u>Agree</u>	<u>Strongly Agree</u>
13. Teachers and administrators are knowledgeable regarding child learning and development.	1	2	3	4	5
14. School staff possess the knowledge, attitude and skills to ensure a quality education for all students, regardless of culture, race, gender, or ethnicity.	1	2	3	4	5
15. Teachers use effective approaches to teaching, know underlying instructional theories, and understand relevant research.	1	2	3	4	5
16. Teachers use strategies that demonstrate high expectations for all students.	1	2	3	4	5
17. Parent/staff communication focuses on the school's goals and curriculum, with special attention to in-school and community opportunities to enhance student achievement.	1	2	3	4	5
18. Student performance assessments focus on what students can actually do with the knowledge and skills they have acquired.	1	2	3	4	5
19. Staff development activities deal with teaching strategies for a reduced class size classroom.	1	2	3	4	5

## Part 2. YOUR PERSONAL PROFESSIONAL DEVELOPMENT

20. Please check all of the following statements that apply to you personally.

Over the past school year, I have:

- a. engaged in a mentor relationship with another staff member.
- b. participated in joint planning activities with SAGE teachers.
- c. collaborated with other teachers in delivering lessons.
- d. collaborated with other teachers in evaluating student progress.
- e. participated in a study group or on-line network.
- f. collaborated in school-wide instructional initiatives or themes.
- g. collaborated with other schools or institutions.
- h. conducted research connected to my teaching.
- i. attended a professional conference or skill-building workshop.
- j. attended a workshop, seminar or retreat focused on diversity or human relations training.
- k. attended a workshop, seminar or retreat focused on teaching smaller classes.
- l. taken a course for graduate or CEU credit.

21. Do you have a personal, formal, written professional development plan?

No (Please go to Part G.)       Yes

22. Which of the following statements most accurately reflects the content of your professional development plan?

- a. It was determined primarily by me.
- b. It was determined in consultation with school administrators.
- c. It was determined in consultation with district administrators.
- d. It was determined primarily by school and/or district administrators.

### G. SAGE COMMENTS

Please comment on any other aspects of the SAGE program that have not been addressed in this questionnaire.

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**PRINCIPAL QUESTIONNAIRE**

SPRING 2001

District \_\_\_\_\_

School \_\_\_\_\_

Name \_\_\_\_\_

Date \_\_\_\_\_

**A: Reduced Class Size and Your Teaching**

Briefly describe what you believe to be the major changes in teaching that have occurred in your school as a result of small class size.

**B. Rigorous Academic Curriculum**

SAGE requires schools to provide a rigorous academic curriculum, defined by DPI as "one based on challenging content standards developed for English language arts and mathematics, which specifies what children are expected to know and be able to do related to those subjects, contains rigorous and coherent content, and encourages the teaching of advanced skills to all children."

1. In your opinion, to what extent has a rigorous academic curriculum in reading/language arts been implemented in your school as a result of SAGE? Please circle one answer.

Not Implemented	Somewhat Implemented	Mostly Implemented	Completely Implemented
1	2	3	4

Briefly describe your reading/language arts program and indicate why you believe it to be rigorous academic curriculum.

2. In your opinion, to what extent has a rigorous academic curriculum in mathematics been implemented in your school as a result of SAGE? Please circle one answer.

Not Implemented	Somewhat Implemented	Mostly Implemented	Completely Implemented
1	2	3	4

Briefly describe your mathematics program and indicate why you believe it to be rigorous academic curriculum.

### C. Staff Development and Accountability

SAGE requires a staff development and accountability program that includes a one-year transition program for new employees; time for employees to collaborate and plan; professional development plans submitted to the school board; regular school board review of staff development plans; and an evaluation process that identifies individual strengths and weaknesses, includes a support plan, and allows staff members to comment on and contribute to revisions of the evaluation process.

1. In your opinion, to what extent has a *new teacher transition program* been implemented in your school? Please circle one answer.

Not Implemented	Somewhat Implemented	Mostly Implemented	Completely Implemented
1	2	3	4

Briefly describe your new teacher transition program.

2. In your opinion, to what extent has *collaborative planning time* been implemented in your school? Please circle one answer.

Not Implemented	Somewhat Implemented	Mostly Implemented	Completely Implemented
1	2	3	4

Briefly describe your collaborative planning time program.

3. In your opinion, to what extent have *professional development plans* been developed in your school? Please circle one answer.

Not Implemented	Somewhat Implemented	Mostly Implemented	Completely Implemented
1	2	3	4

Briefly describe your professional development program.

4. In your opinion, to what extent has a *staff evaluation program* been implemented in your school? Please circle one answer.

Not Implemented	Somewhat Implemented	Mostly Implemented	Completely Implemented
1	2	3	4

Briefly describe your staff evaluation program.

**D. Education and Human Services (Lighted Schoolhouse)**

**LIGHTED SCHOOLHOUSE 2000-2001**

SAGE requires participating schools to keep the school open every day from early in the morning until late in the day, and to collaborate with community organizations to make educational and recreational opportunities, as well as a variety of community and social services, available to all school district residents.

The left-hand column is a list of possible Lighted Schoolhouse activities. Please complete the columns to the right of any activities that take place at your school by checking or providing the requested information. If activities take place at your school and are not listed, add them to the bottom of the grid.

Activity	Purpose	Purpose	Target	Population	Time	Time	Attendance
	Academic (X)	Social (X)	Students (X)	Parents/ Community (X)	When Run (AM, PM or Evening)	When Initiated (Year)	Estimated Number of Annual Participants
Child Care							
Health Clinic							
Breakfast							
Tutoring							
Homework Help							
Extended Library							
Adult Recreation							
Scouts Girl/Boy							
Music Lessons							
Summer Reading							
Head Start							
Social Services							
Family Resource Ctr.							
Tech Ed.							
GED Prep.							
PTA/PTO							
Family Literacy							
Parent Advisory							
Other							
Other							
Other							

**E. SAGE comments**

Please comment on any other aspects of the SAGE program that have not been addressed in this questionnaire.