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## **Taking Small Classes One Step Further** **Reports and Recommendations from a National Invitational Conference**

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Reduced class sizes in American schools are becoming a reality. Through federal, state, and local initiatives, schools have been hiring more teachers and implementing smaller classes in the elementary grades as a strategy for improving learning, especially in schools serving students at risk for failure. This initiative for class size reduction (CSR) has resulted in a substantial cohort of teachers and administrators with significant experience and expertise working in small classes.

The current CSR movement has arisen from public concern about the quality of education and from research that confirms that children learn better when they are placed in small classes with effective teachers. The results of CSR experiments like Tennessee's Project STAR, Wisconsin's Project SAGE, and California's statewide program for reducing class size in Grades K-3 all indicate that—both in the short and long run—placement in small classes at an early age has academic benefits

that are especially profound for children at risk.

Nevertheless, CSR as a school-reform strategy has raised other pressing questions about classroom process. How can we apply existing research and instructional models to make small classes optimally effective? What instructional strategies work best in small classes? What professional development experiences do teachers of small classes need?

Equally important questions have been raised about how best to implement CSR in schools. Given limited school resources and space, how do we utilize existing funds and facilities to implement small classes? How can CSR be combined with other early-intervention programs like preschool or remedial reading to enhance the benefits of small classes? How can we establish communication and dissemination networks to inform the public about the benefits of CSR? How should districts and states evaluate CSR initiatives for optimal program development?

In seeking answers to such questions, researchers, administrators, and teachers have recognized that small classes will not solve all our schools' problems or completely close the achievement gap among student groups. However, CSR can be a facilitating condition for teaching and learning. Educators also realize that the shortage of experienced teachers to staff new classes, the paucity of information about best practices in small classes, and the need for effective procedures for evaluating small-class initiatives all call for a more extensive understanding of the use of CSR in school reform.

It was in this context of extending what we know about small classes in order to facilitate classroom practices effectively that this national invitational conference on furthering our understanding of CSR was held. Its purposes were both to facilitate effective implementation of CSR and to promote research on those instructional practices that are most effective in small classes. It built on the



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knowledge base shared and developed in a related conference held in December 1999, "How Small Classes Help Teachers Do Their Best."

Both conferences, cosponsored by the U.S. Department of Education and the Mid-Atlantic Regional Educational Laboratory for Student Success (LSS) at the Temple University Center for Research in Human Development and Education (CRHDE), provided forums for national dialogue on how to advance current practices to achieve school success for the increasingly diverse student population in the nation's schools. This conference, convened in Washington, DC on November 30 and December 1, 2000, was particularly timely, given that the improvement of American schools has become a national priority, that resources for CSR are being allocated more widely, and that we have yet to determine how to optimize the use of those resources to improve schools.

At the conference, leading educators, policymakers, and researchers in the nation gathered to discuss ways that schools, states, and the federal government can further the CSR reform effort through research and practical application and to extend the progress made at the 1999 conference. To those ends, the organizers of the conference commissioned papers from leading scholars and educators that examined three broad themes: teaching practices in small classes; evaluation of small classes; and support of effective classroom structures and teacher development. In addition to in-depth discussions of the implications of findings reported in the commissioned papers, the conference featured a panel in which practitioners shared their experiences and lessons learned from implementing CSR. They focused on issues of

incentives, instruction, and professional development that arise from that implementation. Conference participants also worked intensively in small groups to discuss the key themes and to generate next-step recommendations for advancing reform efforts.

This issue of the *CEIC Review* provides a synopsis of those recommendations and summaries of the commissioned papers. In doing so, the issue contributes to a goal that conference participants identified as crucial to the success of CSR as a school-reform strategy: dissemination of research and practical knowledge in an understandable form that can facilitate the policy and classroom efforts that lead to student success.

#### **Advancing School Reform Through Class Size Reduction: Next-Step Recommendations**

While conference participants expressed divergent opinions on specific next-step strategies, substantial consensus emerged through small work groups. The groups' recommendations focused on four major topical areas: improving organizational and implementation support for CSR; professional development focusing on effective practice in the classroom; strategies for broader dissemination of the knowledge base; and evaluation strategies that will inform future CSR efforts.

#### **ORGANIZATION AND IMPLEMENTATION SUPPORT**

In order to use what is known from research on CSR to develop and support effective school reform based on smaller class sizes, and to overcome some of the practical obstacles to implementing CSR, work groups discussed what steps would optimize support within and

beyond schools implementing the reform. Several points of agreement emerged:

- Government support for program initiation and continuation should take into account the need for funding and implementation strategies that have been proven to work.
- Knowledge about optimal classroom structures and best practices should be actively incorporated in the organization of new and existing programs.
- Ongoing, mutually beneficial collaboration among CSR schools should be fostered to develop initiatives effectively.
- Administrators should encourage instructional leaders to advocate and support CSR initiatives in their schools and districts.

#### **PROFESSIONAL DEVELOPMENT**

The development of teacher expertise and classroom practices in order to maximize the potential benefits of small classes played an important role in work-group discussions. Major recommendations included the following:

- Ensure that as funds are allocated to CSR, they are also adequately earmarked for staff development.
- Relate professional development closely to successful CSR models.
- Plan professional-development activities so that the needs of both beginning and experienced teachers are considered.
- Focus professional-development workshops on classroom-management issues, including time on task, discipline, and record keeping.
- Concentrate professional-development efforts on the use of those practices that are best suited to

small classes, such as balancing the breadth and depth of content coverage and building on the increased sense of community among teachers and pupils in small classes.

#### DISSEMINATION OF THE KNOWLEDGE BASE

A broader dissemination of the knowledge base on small classes was considered as an essential next-step task in advancing implementation of CSR policy at state and local levels. It was concluded that to garner continued and expanded support for CSR policy, the public needs to be educated about the nature of programs to reduce class size, the support needed to achieve successful implementation, and the improvements in teaching and learning that the programs produce. Policymakers, educators, and administrators should expand collaborative relationships to keep all concerned updated about the latest research, recommendations, best practices, and successful CSR programs.

Participants proposed specific strategies for expanding delivery of information regarding CSR research and practice for school reform, including the following:

- Disseminate audience-specific information, through both traditional and Internet-based media, about the benefits of CSR, targeting information to policymakers, administrators, principals, teachers, and parents.
- Collaborate more effectively with national organizations like the Council of Chief State School Officers and the American Association of School Administrators to compile and disseminate findings on CSR initiatives.
- Create publications that increase general awareness of

- research on the academic and nonacademic benefits of small classes;
- feasible funding mechanisms for CSR;
- regulations accompanying state and federal CSR funding and their interpretations in different locales;
- ways to deal with the need for additional teachers and classrooms when both are in short supply,
- the most efficient ways to implement CSR in particular schools and districts;
- optimal instructional strategies for small classes;
- ways to share experiences with other teachers and administrators who have experience with CSR initiatives; and
- methods for evaluating CSR initiatives in both the short run and the long run.
- Develop strategies for sustaining continuous collaboration and networking among CSR teachers, including traditional person-to-person opportunities like workshops and conferences and virtual opportunities, such as videos, videoconferencing, and the Internet.

#### EFFECTIVE EVALUATION

Conference participants called for further evaluations to inform and improve CSR practice. Evaluations of both small- and large-scale CSR efforts are needed to show why small classes work and to determine the conditions under which they work best. The following steps were identified for making evaluation more effective:

- Encourage efforts to increase funding for CSR data collection

and assessment at the state level.

- Support long-term evaluations to extend the scope of available data.
- Conduct implementation studies before undertaking large-scale research projects to determine appropriate research questions and important variables for improving the accuracy of evaluation.
- Use multiple evaluation indices to better understand the total effect of CSR, including
  - teacher satisfaction and retention rates;
  - student achievement and attendance patterns;
  - student social and emotional development;
  - quality of classroom environment; and
  - parental involvement and feedback.
- Evaluate how support from the community at both the school and district levels translates into the success of a CSR initiative.
- Design studies to estimate the effectiveness of CSR for English language learners and students with disabilities.

#### Conclusion

In both general discussion sessions and small work groups, participants concluded that increased sharing of knowledge is vital to the progress of CSR reform. Especially important is communication of knowledge between practitioners and researchers and among practitioners working in different small-class environments. Improving communication is important for fostering the sense of community that is a chief benefit of small classes. Communication of results showing effective CSR efforts to policymakers is also crucial to the success of the reform. ☞

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# Life at Draper Elementary School:

## Class-Size Evaluation Lessons

*Patrick Harman, SERVE*

Since 1996, *SERVE* has been evaluating the comprehensive school reform (CSR) initiative at Draper Elementary School, located in a rural mill town in central North Carolina. Their most recent findings indicate that class size reduction has led to more effective teaching and improved academic performance at the school. In the past four years, *SERVE* evaluators have gained a number of important lessons on conducting evaluation research relative to understanding the school context, observing the school and classroom processes, and evaluating perceptions from the multiple perspectives of teachers, parents, and staff.

### Lesson 1: Understanding the School Context

*SERVE* has provided Draper Elementary with an annual evaluation of the initiative as it relates to student achievement and implementation, which entails frequent visits to the school to assess students, observe classrooms, and talk with the teachers and principal. *SERVE* has also provided professional development support to the faculty as it relates to reading-instructional strategies and use of student portfolios.

In 1995–1996, prior to the CSR initiative, Draper ranked 13<sup>th</sup> among the 14 district elementary schools in the grade 3–5 achievement rankings, and only 61% of the students were on grade level. After the first year of implementation, *SERVE* staff reported to the faculty that a majority of their kindergarten students were 6 months to a year behind in development when they entered Draper. Thus, an additional reading program was established for all students, and an after-school tutoring program was initiated. A one-to-one in-school

mathematics support program was also created.

### Lesson 2: Understanding School and Classroom Processes Through Observations

Much can be learned by observing programs in action. Observations reveal differences between how a program is running and how it is intended to run. *SERVE* evaluators observed classrooms in May 2000 to begin determining the typical instructional strategies employed in small class-size classrooms. Arriving unannounced, one of three observers spent 15 minutes in each classroom recording what was taking place in terms of grouping, instructional and orientation practices, student activities, technology use, and assessment techniques.

The most frequently observed instructional strategies were instructional feedback to enhance student learning (15 classrooms), direct instruction with the entire class (14 classrooms), and independent seatwork (12 classrooms).

In 2000, *SERVE* began to examine what happens to a school when it implements class size reduction. In particular, investigators wanted to understand the types of interactions that occur in small class-size schools between students and teachers and between students as well as the purposes of the interactions observed. Over the course of a week in the fall of 2000, four *SERVE* observers spent at least two hours each at Draper observing in the hallways, the cafeteria, classrooms, and the media center. Each interaction was coded as instruction-oriented (receiving/providing assistance, guidance, or information), relationship-oriented (conversation and praise), and management-oriented (discipline and order). On the basis of this data,

the evaluators developed vignettes describing what was observed in various venues in the school.

### Lesson 3: Understanding Perceptions from Multiple Perspectives

Focus groups revealed that parents and teachers often report observing similar phenomena. For example, the teacher focus group conducted at the end of the 1996–1997 school year highlighted several implementation difficulties as well as many perceived benefits of smaller classes. Reflecting back on the year, both parents and teachers were concerned about the loss of assistants and specialty teachers necessitated by the class-size reduction initiative. On the positive side, teachers and parents noted the positive atmosphere in the class, increased communication between parents and teachers, greater variety of instruction taking place in classes, and significant improvement in the students' reading skills.

It is critical that evaluators and researchers continue to examine implementation issues and the potential benefits of smaller classes. Studies such as those at Draper are important in building the procedural knowledge about how smaller classes work that will aid other schools in their efforts to implement CSR initiatives. Over the next few years, *SERVE* will be conducting a series of meetings for district teams interesting in implementing CSR. Meetings will focus on CSR implementation, including classroom space, financial resources, and personnel. *SERVE* is also establishing a cadre of CSR-experienced teachers and administrators to allow opportunities for educator teams to attend instructional-strategies workshops in the summer. ☘

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# Design for the Evaluation of the Federal Class-Size Reduction Program

Mary Ann Millsap and Beth Gamse, *Abt Associates Inc.*

In spring 2001, Abt Associates Inc. began a national evaluation of the class-size reduction (CSR) program for the U.S. Department of Education. The study was to focus on implementation and early impact of a *federal* program, not on class-size reduction efforts in general.

Data collection was to include surveys of representative samples of districts and schools as well as site visits to six states, two large districts in each state, and two schools in each district. The states selected differed by such variables as federal CSR allocation, existence of state class-size reduction efforts, and geographic region.

The evaluation was designed to investigate four major areas: (a) distribution and uses of federal CSR funds; (b) implementation of the federal program; (c) impact on class size; and (d) impact on teaching.

## Distribution and Uses of Funds

Class-size reduction funds are intended to serve multiple purposes. The largest proportion of funds goes to support teacher salaries; smaller proportions are intended to support teacher recruitment and professional development. The evaluators were particularly interested in documenting the numbers of teachers hired and the extent to which districts drew upon multiple funding sources for hiring. Other topics of interest included the use of CSR funds in district decisions about whether and how to participate in CSR, the distribution of CSR funds to schools, and the nature of professional development supported with CSR funds.

## Program Implementation

This evaluation was to focus primarily on how districts and schools have implemented the federal CSR

program at four levels: state, district, school, and classroom/teacher. Research questions at the state level were to explore interaction with other state initiatives, especially for class size reduction. Questions about the state role were to be addressed through the site visits, capitalizing on the diversity across states.

Questions about district-level implementation were to consider sources and qualifications of new teachers, types of recruitment activities, types of staff development and training provided for uncertified teachers, ways districts cope with shortfalls between CSR allocations and actual costs to staff smaller classes, and effects of the CSR program on availability and maintenance of facilities.

Data were to be collected on various school-level implementation issues, including the number of teachers each school hired, the modifications, if any, schools had to make to add teachers, and perceived effects of CSR on the school. Also of interest, as an influence on implementation, were the level of principals' discretion over categorical funding and comparison of their spending priorities for their schools' budgets to districts' priorities.

Among classroom-level topics to be addressed were any instructional modifications used to capitalize on the increased flexibility thought to accompany reduced class size, teachers' interactions with students and with one another on instructional issues, and the proportion of time focused on classroom management rather than instruction.

## Impact in the Classroom

The evaluators wanted to investigate whether federal CSR funds were indeed used to reduce class size and, if so, by how much. Information

for the past three school years was to be collected, allowing evaluators to compute the average number of students per classroom, per teacher, and per full complement of teachers at each time point for each grade. Thus, the study would show how adding teachers affected the average class size in a grade.

Since the federal program aims to improve teaching, the evaluation was to examine changes in instructional practices through classroom observations and self-reports of observed teachers. Evaluators were to ask teachers to compare their reduced classes to larger classes in earlier years. Also to be explored was the extent to which teachers have been able to enrich curriculum or promote elaborated homework assignments. District and school efforts to support teacher learning would be documented.

The completed study will provide nationally representative findings on how federal CSR funds were spent and how many teachers were hired with the funds. It will furnish comparative results on the educational backgrounds and experiences of teachers in reduced-size and nonreduced classrooms. The study will also offer federal-level data on issues faced by state class-size reduction efforts, such as teacher shortages in large, high-poverty districts. Finally, it will furnish rich qualitative data on district funding decisions, selection and outfitting of schools for CSR, and changes in teaching practice to take advantage of smaller classes. Once disseminated, these findings will be useful to federal policymakers as they deliberate the redesign and refunding of the CSR program. ☘

# Evaluating the Effects of Statewide Class-Size Reduction Initiatives: The Need for a Systemic Approach

*George W. Bohrnstedt, American Institutes for Research; Brian M. Stecher, RAND; and Michael Kirst, Stanford University*

One of the most popular programs that the federal government and a number of states have undertaken to improve student achievement is class size reduction (CSR). Because CSR is among the most expensive of the various educational programs, it is important that states with CSR initiatives evaluate whether the program is having its intended effects. Although most efforts to reduce class size have occurred at the local or district level, a systemic approach to the evaluation of CSR is in order regardless of the size and level of the intervention.

## The Conceptual Model

In order to ensure a comprehensive, systemic research design for evaluating the effects of CSR in California, the consortium of organizations contracted to evaluate CSR designed a conceptual model to capture the complexity of the system within which CSR was occurring. This conceptual framework is probably general enough to be used as a starting place for other states implementing CSR at multiple grade levels on a statewide basis as was done in California. The model examines how district and school policies might have been affected by the state's CSR initiative and how these policies relate to resource allocation, other ongoing reforms, parental involvement and support for the program, and teacher quality and training.

### SOME GENERAL PRINCIPLES USED IN FORMULATING THE STUDY DESIGN

Consortium researchers first spoke with major stakeholders, including state-level policymakers, superintendents, teachers, researchers from the consortium's

organizations and other organizations, and independent consultants. From these discussions, a number of principles emerged for the evaluation of CSR in California that would seem appropriate for an evaluation of CSR in any state:

- A single, integrated evaluation is preferable to a set of unrelated small-scale studies.
- The study design needs to be comprehensive because CSR is a system-wide intervention.
- The evaluation should be both formative and summative.
- A longitudinal design is essential.
- The evaluation needs to be as rigorous and objective as possible so that the findings will be credible to both supporters and skeptics.

## The Sampling Design

In order to link and aggregate the information gathered at different levels of the system, a nested sample of 125 representative districts and 625 schools was obtained. This was followed by a selection of one first-grade teacher from one half of the sample schools and one second-grade teacher from the other half. In addition, from each of the sampled schools, one, two, or three third-grade teachers were selected, depending on the number of third-grade teachers in the school. Finally, a random sample of parents of third-grade students whose teachers had been selected for the teacher sample was drawn.

The survey provided extremely useful data on the problems districts and schools had in implementing CSR and on why some chose not to implement CSR at all grade levels or at all in the initiative's first three years. It also provided data on the ways in which the implementation of CSR

either articulated with or interfered with other ongoing education reforms in the district. The surveys were used to document how CSR exacerbated the preexisting space crunch in schools. The surveys of teachers provided invaluable data on whether and how their classroom practices changed as a function of being in a reduced classroom. The survey data from parents made it possible to determine the degree to which parental involvement with the teacher changed as a function of whether the child was in a reduced classroom and to determine parents' general perceptions of the quality of their children's education as a result.

## Assessing Achievement Effects

Assessing the achievement effects of CSR in California was complex. First, there was no baseline data, since the CSR was introduced in the fall prior to the adoption of the new state assessment (SAT-9). Second, even if there had been baseline data, California's state data system does not allow linking student data over time. Third, not all students were exposed to CSR at the same time; district discretion on the implementation led to differences statewide in participation by grade level, by school, and by year. Ninety-nine percent of first-grade students and 95% of second-grade students participated in CSR in 1997–1998, as opposed to only about 70% of third-grade students. The combination of natural variation in CSR participation and the availability of achievement data that is necessary for conducting the evaluation made third grade the most appropriate focus for the evaluation study. The schools that reduced class size in the third grade were different

in terms of their demographic composition from those schools that did not reduce their class sizes—an important factor to be taken into account when making comparisons.

These analyses were repeated in both the first two years of the CSR evaluation study in California. Over the next two years, the consortium will be investigating the cumulative impact of CSR with a longitudinal “dose-response” analysis that compares test scores of consecutive cohorts of fourth graders. CSR does not apply to the fourth grade, and for that reason, systematic changes in fourth-grade performance can serve as an outcome index with which to measure CSR’s effect on learning.

#### THREATS TO VALIDITY IN EVALUATING CSR

The use of nonexperimental designs like those used in California is fraught with threats to validity. For example, California introduced a new state test the spring after CSR was initiated. Since teachers often begin to teach to the test, the gains observed on the new test do not generalize to measures of the same content area when assessed by a different test.

In California, roughly a third of the students in the first three grades are classified as English Language Learners. Researchers were concerned that the SAT-9 might not be sensitive enough to pick up reading gains for this group of students, but they did not have sufficient funds to add a reading readiness test to determine whether prereading achievement gains were occurring for these groups of students.

Numerous reforms have been introduced in California since the introduction of CSR, thereby making it difficult to draw firm conclusions about whether gains in achievement are due to CSR or to other programs. A more rational and thoughtful

approach to the introduction of CSR in California—one in which evaluators worked with policymakers in the design and implementation of program—might well have resulted in greater ease in inferring program effects.

#### A Three-Step Approach Employing an Experimental Design

The preferred approach for determining the effects of a new reform initiative such as CSR would include three steps:

##### *Step 1: The Implementation Issues Study*

The purpose of the implementation issues study is to determine whether there are barriers that would prevent the successful implementation of CSR. A sample of districts would be surveyed to gain information about the difficulty or ease districts of various types would have in implementing CSR. The state would then use these data along with its own data on teacher supply and demand to decide the feasibility of implementing CSR at all levels in the initial program.

##### *Step 2: An Experimental Field Trial*

Once implementation issues are resolved, a field trial would be conducted to determine the effects of CSR at whatever grade levels the intervention is planned for and whether it is helping to close the achievement gap. The trial should run for a minimum of two years to assess change.

The experiment would be more powerful if one could randomly assign teachers to classrooms as was done in Tennessee, thereby determining the degree to which teachers’ years of experience and degree level might interact with class size, the percentage of at-risk children in the classroom, and the influence of other variables in their effects on student achievement.

There are many alternative experimental conditions that could be considered, but the inclusion of each condition needs to be weighed against the practical and political difficulties one would face in trying to introduce them.

The main outcome to be monitored would be gains in student achievement. Were the gains the same for all students, or did certain classes of students show greater or lesser gains than others? It is also important to monitor whether the intervention was implemented as planned. Were there systematic differences in the credentials of teachers in the experimental versus the control classrooms and were there differences in the way teachers in the smaller classrooms taught compared to those in the larger classrooms?

##### *Step 3: Statewide Implementation*

The state would then examine the results from the implementation issues study and the field trial and make a decision about whether to implement the program as designed or to make changes to it. Changes could include a decision to move a disproportionate amount of the resources to districts with high proportions of high-risk children or to provide incentives to move fully credentialed teachers to schools with high proportions of at-risk students.

This study suggests that it would be wise to conduct small-scale studies before introducing CSR statewide. An implementation issues study combined with a field trial can be invaluable for states in developing cost-effective, targeted class-size reduction programs. Such programs may help to reduce or eliminate the unintended consequences observed in California when it implemented its class-size reduction program. ☞

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# Balancing Breadth and Depth of Content Coverage: Taking Advantage of the Opportunities Provided by Smaller Classes

Lorin W. Anderson, University of South Carolina

An increasing amount of evidence suggests that students in smaller classes in the early school years, on average, continue to outperform their peers in larger classes on standardized achievement tests after they return to same-size classes in later school years. However, there is wide variation in the mean achievement scores of students in smaller classes; some conditions in smaller classes will result in greater student achievement, while other conditions will not. The challenge for researchers is to try to understand the conditions under which reduced class size produces achievement gains.

Smaller classes provide opportunities for teachers to engage in practices that improve student achievement; however, it is what teachers do in and with smaller classes that makes the difference, not simply the presence of smaller classes. Smaller classes allow teachers to achieve a greater balance between breadth and depth of content coverage and enable teachers to teach better, but not necessarily differently.

## Breadth Versus Depth of Content Coverage

Content coverage is typically defined in terms of (a) the number of textbook pages students have completed; (b) the number of curriculum topics that teachers have taught; or (c) the proportion of items on an end-of-year achievement test for which students have had an opportunity to learn the relevant content. Content coverage is synonymous with breadth of content coverage.

The difference between breadth and depth of content coverage is

shown in the conceptual distinction between the specific experiences we have in life (“instances”) and the formation of “instances” into categories of experience. The process of forming categories, known as conceptualization, is a critically important part of the process of understanding. Part of good teaching involves helping students form categories that represent the way others see the world. Whereas the number of instances equates with breadth of content coverage, the number of categories as well as their complexity, their abstractness, and the relationships among them combine to produce the depth of content coverage.

## Content Coverage and Student Learning

The distinction between breadth and depth of content coverage is important because it results in very different types of learning. Breadth of content coverage is more likely to result in greater retention of what is being learned, but not necessarily greater understanding. In contrast, depth of content coverage is more likely to result in greater transfer of what is being learned, in part because it leads to greater understanding. Because both retention and transfer are important educational goals, a proper balance between depth and breadth of content coverage is highly desirable.

Given these two distinct goals, one might ask “Why not have the teacher focus on breadth of content coverage and let the students be responsible for depth of content coverage?” Quite clearly, this approach works well for some students, but

for large (and increasing) numbers of students, teachers need to do more.

## Moving from the “How” of Teaching to the “What” of Learning

Because most principals are responsible for teacher evaluation and because most teacher evaluation instruments are teacher-centered, most principals have been taught to focus on the teacher during their classroom observations. In one recent study, this researcher worked with 11 principals in a single school district to help the principals shift their focus from the teachers to the students. A series of monthly seminars was conducted for the group, followed by individual work with each principal. During the school visit, the researcher and principal observed a minimum of two classes using a semistructured observation form. One such occasion provides a good example of the distinction between breadth and depth of content coverage.

A mathematics lesson was given to a third-grade class of 18 students in which the objective was for students to understand tenths, hundredths, and thousandths. Understanding was indicated if students could translate a given number into words, or vice versa. About halfway through the lesson, it became apparent that about two thirds of the students were having great difficulty.

Following the observation, the principal and researcher discussed the classroom experience. The principal had noticed a pattern to the students’ wrong answers: For example, the teacher asked Emily, “How do you write five tenths?”



and Emily wrote .05 on the board. She later asked another student how he would say .038 (written on the board) in words and he said thirty-eight hundredths. Similar mistakes were made by other students.

The researcher recognized that there is a lack of symmetry in the whole number–decimal number line: There is no “oneths.” That is, the tens place is two to the left of the decimal point, but the tenths place is only one to the right of the decimal point. If the students do not realize this, they may be reading everything to the right of decimal point according to the “rules” governing the places to the left of the decimal point. The principal and researcher suggested that the teacher start over and help students understand the asymmetric nature of this number line. The teacher revamped the lesson, and soon the students were able to answer the questions without a problem.

What can we learn from this example? If we focus on the teacher—the “how” of teaching—we see a very common approach to teaching. The teacher taught the children in a whole-class format. It is this “commonness” of teaching that has led to the conclusion that teachers do not teach differently in smaller classes than they do in larger ones.

If the focus is on students, however, attention is shifted from the “how” of teaching to the “what” of learning. In the previous example, students were expected to gain an understanding of tenths, hundredths, and thousandths. After some period of initial instruction, it became evident that there was some conceptual confusion on the part of the majority of students. But this conceptual confusion did not result in random responses from the students; they were giving answers

that were consistent with what they understood.

With an exclusive focus on breadth of content coverage, the teacher could have continued on—instance after instance. Given a sufficient number of instances and a variety of activities, the students might eventually understand decimals. If instead, the focus is on depth of content coverage, the teacher could go “back to the drawing board” to provide the conceptual basis that was needed for student learning. On the basis of what students did understand, the teacher could help students move from what they *did* understand to what they *should* understand. Armed with an improved understanding of the concept of place value, students could deal with new instances in a more effective way.

### **Opportunities for Teachers in Small Classes**

If the key to successful teaching lies in a proper balance between breadth and depth of content coverage, coupled with a shift in emphasis from the “how” of teaching to the “what” of learning, these classroom observations suggest the following advantages that may be gained by having small classes:

- *Smaller classes allow teachers to shift from management to learning concerns.* This shift enables teachers to be more concerned about managing learning and less concerned about managing learners. The advantage of this shift from personal concerns to student concerns has been recognized in recent years as a positive movement along the continuum of teacher development. As part of this transition, they become more able to see classrooms through their students’ eyes rather than their own.

- *Smaller classes allow teachers to better monitor the learning of their students.* In larger classes, because teachers cannot monitor every student, they tend to rely on steering groups to determine how things are going, whereas in smaller classes, it is possible to include a greater proportion of the students in the teacher’s steering group. For that reason, instructional decisions are made on the basis of a relatively larger number of students, and fewer students are likely to be left behind. Furthermore, the very nature of monitoring changes. In smaller classes, teachers are more likely to diagnose rather than simply to identify difficulties in student learning. Building on what students do know in an attempt to correct what they do not know is a far more promising approach to effective teaching than providing additional details in the hope that something will click in the student’s mind.
- *Smaller classes allow teachers to decrease the time spent on review.* If teachers truly know what their students know and do not know, they should be able to spend less time on review. Teachers should be able to conduct reviews on a need-to-know basis. This decrease in time spent on review can enable teachers in small classes to balance breadth and depth of content coverage. Coupled with more adequate and accurate diagnosis of student learning, the amount of time saved allows teachers to stop covering content and begin the process of probing the depths of content coverage needed for many students to learn the material. ☞

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# Before and After Class Size Reduction: A Tale of Two Teachers

*Cathleen Stasz and Brian Stecher, RAND*

Research on class size reduction (CSR) has focused more on student achievement than on the mechanisms that may contribute to that achievement. Thus, it is not yet clear *how* small classes lead to higher achievement. This article adds to the conversation about why class size seems to matter in student learning by taking a close look at two third-grade teachers in California.

This in-depth study is drawn from research conducted over the past 3 years by using both qualitative and quantitative methods to evaluate the effects of the CSR initiative in the state. One strand of this research consisted of in-depth case studies of 16 third-grade teachers during the 2<sup>nd</sup> and 3<sup>rd</sup> years of the CSR implementation. In Year 2 of the initiative (1997–1998), 8 of these teachers taught in nonreduced classes and 8 taught in reduced-size classes. This paper focuses on two of these teachers who taught in nonreduced third-grade classes of about 30 students in 1997–1998 but switched to reduced third-grade classes of 20 students in 1998–1999 when their schools implemented third-grade CSR.

From previous research and hypotheses about how a smaller classroom environment might mediate improvements in student achievement, the following questions were examined:

1. Does the change from large to small classes alter the organization or structure of mathematics and language-arts lessons? Do the types of activities change?
2. Do teachers alter specific teaching techniques or practices, such as providing more individual attention to students or grouping them differently for purposes of instruction? Do their methods appear effective?
3. Is there any difference in the cognitive level or content of the

material presented to students? Are the lessons and assignments generally grade appropriate? How demanding are the assignments?

4. Do the classes run more smoothly and make better use of available school time? Are transitions smoother? Are students less disruptive and more on task? Do teacher's management strategies differ?

5. Are teachers' attitudes or views about teaching any different? What value do they see in teaching in a smaller class?

## A Closeup Study of Two Classrooms

Ms. King's class was in Vanguard School, east of Los Angeles. The student population is primarily Hispanic (55%) and Caucasian (22%); about 44% of students participate in a free or reduced-price lunch program. Sixteen percent of Vanguard's students are classified as English Language Learners (ELL). During the first year of the study, it had reduced first and second but not third grade. Ms. King's nonreduced class had 30 students. Now all K–3 grades have been reduced and average about 20 students. In 1998–1999 Ms. King had an aide in her classroom for about 30 minutes a day to help with students reading below grade level. She followed the district math curriculum framework, which is based on the state framework, and used the state and district frameworks in her language-arts curriculum. At the end of third grade, she wanted students to be able to write in paragraphs and to read and comprehend at grade level. However, she felt that about a third of her students were not prepared for third-grade work.

Ms. Lane's class is at Stringfield School, located in southern Los Angeles County. It is a large K–5 school with just over 1,000 students. The

student population is primarily Hispanic (53%) and African American (24%). About 86% of Stringfield students participate in a free or reduced-price lunch program, and about 49% are designated as ELL. The average class size in K–3 is 19 students. In 1998–1999, Ms. Lane had a noninstructional aide in her class about 6 hours per week, but the aide also helped tutor individual children in reading. Ms. Lane had followed the district mathematics curriculum standards for about 3 years. In her opinion, most of her students were unprepared for third-grade math.

## Summary Findings

This close-up view of two teachers who switched from nonreduced to reduced-size classes admittedly covers only a small sample of these teachers' instructional practices. To address the questions that guided this study, several aspects of Ms. King's and Ms. Lane's teaching are summarized, and some comparisons are drawn to previous studies of teaching in smaller classes.

### LESSON STRUCTURE AND ACTIVITIES

The overall structure of the lessons and the activities within them did not differ much from Year 1 to Year 2, despite the change in class size. Both teachers seemed to increase the number of activities carried out within their lessons, especially during mathematics lessons. This pattern mirrors what was found in the Year 1 comparison of teachers in reduced-size and nonreduced classes: Teachers in reduced classes reported doing more than teachers in larger classes. As in some earlier studies, teachers observed in this study generally spent more time teaching language arts than mathematics, irrespective of class size.

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## TEACHING TECHNIQUES

There was little overall difference in teaching practices from Year 1 to Year 2. Ms. Lane's practices seemed especially robust from year to year, following the "exposition, guided practice, individual work, summary" model. Unlike most teachers who participated in the case studies, Ms. Lane did not regularly group students for instruction or work with them on an individual basis. She did not change her grouping practices at all when she worked in a reduced class, preferring to teach to the whole class irrespective of class size. Ms. King, on the other hand, reported using more groups in mathematics when students had difficulties, but this practice did not change from Year 1 to Year 2. Similarly, her grouping practices in language arts looked similar from year to year. She typically worked with one group of students for most of the time period, while other groups did individual seatwork or worked with an aide. Overall, these two teachers still favor the whole-class approach over grouping strategies.

These teachers did not shift toward more individualized instruction even after they moved to smaller classes. Ms. Lane did work with individual students, but for the exclusive purpose of carrying out the district's benchmark assessments. Neither teacher seemed to do an especially thorough job of monitoring students' learning during the lessons except when they adopted a guided-practice strategy of working problems one by one. It may be that these teachers' tendency to teach to the whole class made it particularly difficult to switch to more individually based instruction despite the opportunity provided by the reduced-size class. It may also be that these teachers just lacked experience individualizing instruction.

The content of the mathematics lessons did not appear to change significantly for either teacher. They

stayed fairly closely to the topics intended for third grade or for earlier grades. These findings are similar to the results of the larger state study that showed teachers in nonreduced and reduced-size classes covering the same general topics in mathematics and in language arts and for similar amounts of time. It is possible that the similarity in the breadth and depth of topic coverage reflects the influence of the state curriculum guidelines.

## CLASSROOM MANAGEMENT

A few changes in classroom management were evident as teachers moved from nonreduced to reduced-size classes. Ms. King's reduced class, in particular, seemed quite different, primarily because she did not "quiet" students all the time. Ms. Lane was still clearly in control of the action in her classroom, but she also seemed to provide more positive feedback to students in her reduced-size class. In both cases, the amount of time and energy devoted to discipline, order, and transitions declined with the small class—a finding that has also been noted in previous work.

## PERCEPTIONS OF TEACHING AND LEARNING

Teachers' expectations regarding CSR were not borne out when they actually had smaller classes. Both anticipated substantial changes, but they found things were much the same. Neither teacher seemed to take advantage of the opportunity to individualize instruction when teaching fewer students. It is possible that their expectations were not met because of their existing attitudes. Both teachers seemed to emphasize student ability as the primary determinant of success. Perhaps these teachers did not view CSR as an opportunity for *them* to change. As a result, they may have adopted a somewhat passive role in the change process and were not actively thinking about what they might do differently.

Although student achievement data were not available to measure actual changes in students' achievement, the teaching observed in this study did not appear to be very effective. For example, with regard to the two teachers' lesson management, in both sizes of class they worked at a very slow pace and had unclear goals. These teachers showed little individualization and also did not routinely monitor students learning, diagnose problems, or provide feedback.

For these two teachers, class-size reduction did not lead to dramatic improvements in teaching. Analyses of the case-study teachers and 2 years of survey data from several hundred third-grade teachers show only a few small differences in instructional practices between nonreduced and reduced-size classrooms. The few differences noted, however, are encouraging and should not be discounted. CSR has positively affected most teachers' perceptions: They overwhelmingly report that smaller classes provide opportunities for more individual contact between students and teachers.

The findings reported here and in other studies are fairly consistent with the limited research literature on teaching behaviors and class size. Teachers in small classes continued to use teacher-oriented, teacher-controlled teaching, although they were more likely to individualize instruction through one-on-one interaction with students. This study's findings are also consistent with research that suggests teaching practice is resistant to change and that teachers adapt their practices slowing and marginally as new materials and techniques are introduced. Teachers may need to be trained in instructional techniques that are effective in smaller classes and perhaps also in their attitudes about what factors may influence student learning. ☘

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# Class Size Reduction and Special Education Referrals and Placements

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Class size reduction (CSR) is increasingly popular as an educational reform, and California is at the vanguard of this effort. In 1996, California initiated a state-wide reform to reduce classes in Grades K–3 in its public elementary schools. One potential outcome of the California CSR initiative is a change in the number of children placed in special education programs. Some analysts believe that teachers in smaller classes may be better able to identify students needing special services and that this will bring about an increase in special education referrals and placements. Others, however, feel that smaller classes would better allow for mainstreaming, thereby reducing referrals and placements.

Concerns about the effect of CSR on special education students were expressed in a recently filed complaint with the U.S. Department of Education Office for Civil Rights against the California Department of Education. The complaint alleged that students with disabilities are not allowed to benefit from CSR to the same extent as their nondisabled peers. One of the consequences of the CSR initiative is that it is sometimes more convenient to return students with disabilities to what are called “special day classes” in order to maintain reduced-class sizes in the general education classes. California CSR provisions strictly require that there be no more than 20 students in a single general education class, and although in the past special day classes have had a target of 12 students, size standards for special day classes are not tightly specified.

A related concern is the misplacement of students in special day classes. Under California’s CSR and special education funding provisions, districts may actually have a fiscal incentive for such misplacements. For example, a school whose reduced-size classes in Grades K–3 are all at the maximum of 20 students may contain classes with students who have been mainstreamed. In addition, the school’s special day classes may already be at the target capacity of 12 students. When an additional nondisabled K–3 pupil is assigned to this school, the school has to decide where to put that student. He or she could be added to one of the CSR classes, but that would mean losing CSR funds, because class size would grow to more than 20 students. Another option could be for the school to hire an additional teacher, which would allow all of these classes to decline substantially in size but would also increase costs. Moreover, as a final option, the school could reassign one of the mainstreamed special education students to a special day class. This reassignment would increase the number of students in the special day class to 13 but would avoid the negative financial implications of losing a CSR class or hiring another teacher.

In response to these concerns, the California Department of Education took steps to alleviate the following problems: (a) the disparity in the resources made available for students who are enrolled in special day classes; (b) the increased overcrowding in special day classes; (c) the misplacement of students in special day classes; (d) the increase in the number of

unqualified teachers who are serving special education programs; and (e) the assignment of special education programs to inappropriate facilities. This disparity, however, is likely to continue to raise questions about the impact of CSRs on special education students and warrants further monitoring of the effects of CSR on special education students.

## **CSR Evaluation Studies: The Impact on Special Education**

Since the inception of the CSR reform in California, staff at the American Institutes for Research have conducted yearly evaluation studies of the initiative. As part of the Year 2 evaluation, investigators sought to answer the following questions concerning the impact of CSR on special education:

- How have rates of special education referral and identification and special day class placement changed in the years since state-wide implementation of the CSR reform?
- How did the CSR reform affect recruitment and hiring of teachers with special education credentials?
- How was the morale of special education teachers affected by the CSR reform?
- Did teachers holding special education credentials move to general education assignments with the introduction of CSR?

The results reported are based on quantitative analyses of state archival data, survey data collected as part of the study, and an analysis of interviews with officials from a sample of urban districts in

California. Quantitative data from a number of sources have been used to describe changes in the identification of students needing special education services as well as changes in trends in the distribution of teachers with specialized credentials. These findings are primarily based on analyses of teacher- and school-level data derived from the California Basic Education Data System as well as student-level special education records that were provided by the California Special Education Management Information System.

As part of the work during the first year of the CSR evaluation, surveys were administered in 1998 to 125 of California's 1,054 district superintendents and to 625 of California's school principals. Data from the CSR district and principal surveys were used to address questions about the ease of hiring teachers with special credentials and about the flow of special education teachers to general education classes. The interview findings were derived from a qualitative case study that was conducted with six large urban school districts in California. Within each district, the superintendent and the director for special education programs were interviewed.

In interpretation of the results of the interviews, it is important to keep in mind that they reflect a very small sample of districts and respondents. With respect to student demographics and characteristics of school districts, the six districts do not constitute a representative sample of all California districts; sampled districts were purposively chosen to be large, urban districts with high percentages of English learners and minority students. Although the data illustrate some of the problems

districts encountered for their special education students when implementing CSR, any generalizations based on these results must be made with caution.

### Research Findings

Some of the most important findings from the examination of how CSR might have affected special education and English-learner students are as follows:

- Interviewees contacted in six large districts suggested that the number of students who are *referred* for special education assessment increased with CSR. Factors that may account for this increase include more time for teachers to provide individualized attention; lack of training among teachers on how to provide individualized attention to students in smaller classes (and therefore inappropriate referral for special education assessment); an increased focus on school accountability concurrent with the implementation of CSR; and the CSR-inspired districtwide adoption of creative programs for identifying and addressing the needs of special education students.
- Although the special education referral rate appears to have increased with CSR, the statewide quantitative data suggest that the percentage of students actually *identified* as needing special education services was unaffected by the reform.
- CSR policy imposes a strict class-size limit, whereas the state's special education policies do not. Given that CSR funding is tied to the class-size restriction, some districts, as indicated above, may see a fiscal incentive associated with keeping class size down by assigning special

education students to full-time special education classes (i.e., special day classes) rather than mainstreaming them. This concern was included in the complaint filed with the Office of Civil Rights and was raised by some interview respondents. However, statewide data show no increase in the percentage of students in special day classes since CSR was introduced.

- District staff reported that CSR exacerbated an already-existing shortage of qualified substitute special education teachers.
- Interviewees reported a decline in the morale of special education teachers with CSR implementation.
- Districts reported that hiring teachers qualified to serve special education children was difficult and that this difficulty was significantly worsened by CSR. District survey data indicate that this situation was exacerbated by the flow of credentialed special education teachers to general education classes.

The overall policy recommendation that arises from these analyses is that the effects of California's CSR program on special education students need to be more specifically considered. CSR was implemented very quickly in the state, and that may have brought unintended, negative consequences to the state's special education students. The main lesson arising from the evaluation of CSR reform in California is that attention should be paid to the many possible outcomes of implementing CSR—or of any educational reform—before choosing a timeline for its implementation and a scope for enacting it. ☘

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# Teaching Reduced-Size Classes:

## Lessons For Teachers

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This study, supported by the North Central Regional Educational Laboratory (NCREL), was conducted as part of the evaluation of the Student Achievement Guarantee in Education (SAGE) program to investigate how teachers of reduced-size classes spend their newly acquired extra time.

SAGE was established in 1995 to promote academic achievement of students in kindergarten through third-grade classrooms in selected Wisconsin schools serving low-income children. In exchange for \$2,000 from the Wisconsin Department of Public Instruction for each low income student, schools were required to (a) reduce the student–teacher ratio within a classroom to 15 students per teacher beginning with kindergarten and first grade in 1996–1997, adding second grade in 1997–1998, and then adding third grade in 1998–1999; (b) establish “lighted schoolhouses” open from early morning until late in the evening; (c) develop a rigorous curriculum; and (d) create a system of staff development and professional accountability. Originally SAGE consisted of 30 schools in 21 districts throughout the state. As a result of two expansions of the program, SAGE classrooms can now be found in 566 schools.

A longitudinal evaluation of the SAGE program begun during the first year of program implementation has focused on two general areas: (a) the effects of the program on student academic achievement in reading, language arts, and mathematics at the first, second, and third grade levels; and (b) the classroom events resulting from reducing class size to a 15:1 student–teacher ratio that may account for any program effects on student learning.

To determine the effect of SAGE student–teacher class reduction on student achievement, SAGE classes were compared with classes from a set of comparison schools in SAGE participating districts that were similar in terms of race, income, and other factors, but had normal class sizes. Achievement was measured with the Comprehensive Test of Basic Skills (CTBS) Complete Battery, Terra Nova edition, at each grade level. The results from 1996–2000 show that at the first-grade level, when adjusted for pretest scores, SAGE students scored significantly higher on posttests in reading, language arts, mathematics, and total score than did first-grade students in comparison schools. Second- and third-grade test scores show that the achievement advantage of SAGE students over comparison students was maintained and, in most cases, increased in second and third grade.

The main effect of having fewer students is that teachers individualize their instruction. The content of instruction is uniform, but the teaching procedures vary with the student. This increased use of individualization in reduced-size classes is a result of increased knowledge of students; less discipline, which makes more time available for instruction; and greater teacher enthusiasm. The individualization that is produced, along with an increased use of hands-on activities that these three elements also enable, results in deeper and increased content, in more student self-direction, and ultimately in greater student achievement.

### **Effective Reduced Class-Size Teaching**

As a result of the SAGE evaluation and other research, the general

instructional characteristics of reduced class-size teaching are known. However, what more effective reduced class-size teachers do in their classrooms in comparison to less effective reduced class-size teachers is not known. The purpose of the current study was to compare the teaching behavior used by a group of more effective, reduced class-size, first-grade SAGE teachers with the teaching behavior used by a group of less effective, reduced class-size, first-grade SAGE teachers by the use of qualitative research procedures.

The teachers for this study were first-grade teachers or teacher teams who participated in the SAGE program for a minimum of two years. Researchers identified teachers or teacher teams who had comparatively higher than expected achievement gain scores for each of the two years (Group A) and teachers or teacher teams who had comparatively lower than expected achievement gain scores for each of the two years (Group B).

Each teacher was observed a minimum of 4 times in reading and math instruction. The observation guide focused attention on (a) general aspects of teaching, such as objectives, learning activities, teacher and student behavior, and class organization; and (b) on teacher behaviors found to be related to reduced class-size teaching from our previous research such as individualization, discipline, hands-on activities, and instructional time.

Three formal interviews were conducted with each teacher: an introductory interview, a reading interview, and a mathematics interview. Teachers were also asked to complete a self-report regarding their instructional techniques.

The general pattern of teaching found to be associated with teaching reduced-size classes was evident in varying degrees in both the higher achieving classrooms and the lower achieving classrooms. All of the teachers emphasized individualization to some degree. However, Group A classrooms differed from Group B classrooms in instructional orientation, in management, and in individualization.

Group B teachers have goals that emphasize students' personal development and stress methods that facilitate independent, experiential learning. These preferences result in a less central role for the teacher and less emphasis on the basic skills and concepts of reading and mathematics in comparison to Group A teachers. Group B teachers have student management procedures that are tolerant and permissive and lesson management practices that evolve and develop. These practices are time-consuming and result in less time available to devote to academic, goal-directed instruction in comparison to Group A teachers. Although Group B teachers use individualization in their reduced-size classes, because of their attitude toward the active teaching of basics and the limited time available for instruction in their classrooms, their individualization is less teacher-directed and basics-oriented than that of Group A teachers.

Group A teachers have more balanced goals that include attention to personal development, but they emphasize the goals of basic skills and concepts. The methods that they prefer are those associated with explicit teaching, such as explaining, modeling, checking, and evaluating. These goals and methods result in more active teaching of the basics in comparison to Group B teachers.

It should be noted that although the teaching methods of Group B teachers jeopardize achievement as

measured by standardized tests, over time the goals and methods of the Group B teachers may not be harmful and may indeed be helpful. If the goals of thinking and problem solving are realized, students will be well served in the future even though the attainment of basics is delayed.

### **Recommendations for Teachers**

The results of this study, although tentative because of the limited sample size and the examination of only one grade level, have possible implications for staff development in reduced class-size schools. Improved teaching and learning occurs in most first-grade classrooms when class size is reduced to about 15 students. It is not unreasonable to speculate that even the teaching of less effective teachers improves as they move from a larger class to a smaller class. The results of this study suggest that teachers of reduced-size classes could benefit students' learning to a much greater degree if the teachers adopted the mindset and methodology of the most successful reduced class-size teachers.

Reduced class-size teachers need to realize that the extra time afforded by having a reduced class size provides them with an opportunity to do everything in their power to improve academic achievement. Personal and social goals are important and need to be part of a balanced curriculum, but they cannot be permitted to dominate instruction. If they consume the extra time, the value of reducing class size will be diminished. The notion of providing students more freedom and voice in the classroom in choosing activities, identifying content goals, working in groups, and engaging in other self-directed activities that reduced class size permits is appealing. But the practice of a teacher moving to

the side and putting the student on center stage is a risk unless it is done in an unambiguous context of basic skills and knowledge achievement.

Reducing class size results in more time for instruction, but the teacher's management methods can expand or shrink that time. When teachers are overly permissive and nonassertive in an attempt to implement student self-discipline in their family-like small classes, misbehavior often emerges and instructional time is lost. A structured, consistent student-management program in which the teacher is decisive, firm, and fair is needed just as much in a reduced-size class as it is in a regular-size class.

To maximize available time, teachers also need to carefully organize their lessons. Although some fluidity in lessons is desirable, time is lost if the teacher's lessons are not clearly organized at the start. The teachers need to be sure about what they want students to know or be able to do at the end of the lesson, to identify and carefully sequence learning activities that can lead to the achievement of goals, and to assemble the materials and resources that are to be used. The lesson as implemented should proceed in a logical order and at a brisk pace.

The type of individualization that reduced class-size teachers ought to use is individualization of process. The specific elements of individualization that seem to account for the success of reduced class-size teaching in promoting student learning are articulation and critique. Teachers of reduced-size classes need to fill their newly acquired time with constant requests to students to share their knowledge and with constant feedback to students regarding the knowledge that is shared. ☘

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# The Varieties of Small Classes and Their Outcomes

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This article reviews the research regarding student outcomes under different class-size reduction (CSR) arrangements and compares the evidence on pupil-teacher ratio (PTR) to that on class size (CS). Is there a knowledge base from which to draw conclusions about these different classroom organizations? Is there evidence on PTR and CS from which inferences may be drawn about their respective influence on pupil learning? What experiences have teachers reported when teaching under these different models? Does research provide a set of principles that would explain why the different models or “varieties” are more or less effective?

Except for a daylong small class in which one teacher is responsible for the students, most varieties described in the research are *not* small classes; they are PTR options. The *class size* is the number of students in a class. *If 30 students are in a room with one teacher, the CS is 30; if two teachers are with that class, the CS is 30, but the PTR is 15:1. If four teachers provide services to the 30-student class, the class size is still 30.* This persistent confusion between the terms CS and PTR and their underlying concepts robs children of excellence in education and mocks serious research on CS and its relation to academic performance. When the terms are used precisely, research on CS and research on PTR can be compared and contrasted.

Nationally, the difference between the average CS and PTR is about  $n = 10$ . In a district in which the PTR is 17:1, most teachers will have class sizes of about 27. This reasonably large difference aside, processes in a small class are

dramatically different from those of large classes with small PTRs.

If the two terms—PTR and CS—are not the same, why would they be used interchangeably? To say that PTR and CS “vary together” so they can be substituted for one another is to miss the point of what the two terms mean. Height and weight also vary together but cannot be interchanged.

Meta-analyses in the late 1970s triggered a modern-day round of interest and activity in class-size research and practice. Prime Time in Indiana and the DuPont Study in Tennessee preceded Project STAR, a longitudinal, statewide, randomized experiment to determine the effects of small classes (about 13–17 pupils per class) on student achievement and development in primary grades (K–3). The STAR study and its large databases made possible later analyses to answer questions regarding long-term results from early small-class participation. Students in small (S) classes (13–17 students) performed better on both norm-referenced tests (NRTs) and criterion-referenced tests (CRTs) than did the randomly assigned students in regular (R) (22–25 students) and regular-with-aide (RA) classes. This was true for each year from kindergarten through third grade.

Although the research leads to an inescapable conclusion that small classes cause improved student performance, educators are still trying to learn *why* students excel in small classes. Despite our incomplete understanding of classroom processes, Project STAR, Project Challenge, and analyses of student outcomes after students left STAR following third grade have all helped

define “correct” ways to implement reduced-size classes to maximize the positive and enduring effects of small classes in the early grades.

## The Varieties of Small Classes

Varieties in employing class-size strategies are more like PTR than CS, and without precise attention to the number of students in a class and study of the instructional processes, it is impossible to determine exactly if a reported variety is related to CS or PTR. Sometimes groups contemplating using CS ideas confuse PTR and CS in their discussions. Evaluation of the Buffalo CSR revealed a number of instructional models in use:

- *New small classes* had 20 or fewer students taught by one teacher. The classes were created and the teachers hired specifically for the CSR project.
- *Existing small classes* had 20 or fewer students taught by one teacher. These classes existed before the implementation of the CSR project but had enrollments greater than 20 students then. When students were removed from these classes to create new classes, the enrollments dropped to below 20.
- *Team-taught classes* had two full-time teachers sharing responsibility for one class of students, usually with a relatively large number of students.
- *Push-in or pull-out classes* were characterized by a teacher rotating between or among two, three, or more classrooms throughout the day, usually working with small groups of students. A push-in teacher usually worked in a corner of



the classroom, whereas a pull-out teacher removed students from the regular classroom to work with them in the hall or a spare room.

### **Outcomes for the “Varieties” of Small Classes**

Although discussed as a reduced class-size project, much of Indiana’s Prime Time actually manipulated PTRs. Prime Time demonstrated that class-size benefits could not be reproduced by using a full-time teacher aide, something also shown in STAR. Adding an aide to a classroom reduces the PTR but does not lower the actual class size. Prime Time had mixed achievement outcomes, although surveys of teachers and principals generally provided positive responses.

The California CSR effort was hastily implemented in grades K–3 statewide in 1996. The size of the CSR effort did not allow evaluators to determine the actual class sizes across the state. Evaluations showed slightly more positive student test-score outcomes for students in CSR schools, but early gains were about what is obtained in PTR efforts. The real test will be when the students who started school in kindergarten in small classes take the third-grade test.

In Wisconsin’s Project SAGE, there were some “pure” CS examples of reduced-size classes and some varieties that manipulated PTRs without reducing class sizes. Title I programs often reduce PTRs through adding aides and teaching staff to larger classes. Evaluations of Title I have provided outcomes for that variety of small class, but to date, they have not shown glowing effects.

### **Class-Size Outcomes**

Although results from varieties of small classes are still ambiguous,

results from true CSR initiatives are consistent and positive for student outcomes (achievement, behavior, participation) both in the long term and in the short term, as well as for teachers.

Based on studies of such programs as Wisconsin’s SAGE, the following list summarizes teachers’ comments about working in reduced-size classrooms:

- Teachers employ a wider variety of instructional strategies, methods, and learning activities and are more effective with them.
- Teacher attitudes and morale are more positive.
- Classroom management and discipline are better.
- Students benefit from more individualized instruction.
- Students develop better human relations and have greater regard for others.
- Students learn the basic skills better and master more subject matter.
- Students engage in more creative and divergent thinking processes.
- Students learn how to function more effectively as members and leaders of groups of varying sizes and purposes.
- Student participation and interaction improve.

### **How Does Class Size Work?**

Research in small classes consistently shows that there are “correct” ways to implement CSR, which produce positive benefits for students:

- Start the pupil in the small class when he or she starts school (Pre-K or K).
- Avoid PTR-like events, such as pull-outs. The class should be kept together with the teacher.
- Maintain the small class (15–18 to 1) for at least 3 years, or preferably 4.

- Organize small classes so they have a typical cross section of students in the school.
- Phase out “projects” as small-class benefits grow.
- Carefully analyze personnel assignment and use.

### **Recommendations for Future Research on Class Size**

The summary of research suggests the following recommendations for future research and evaluation that will keep clear the fundamental distinction between reducing the class size and reducing the pupil–teacher ratio.

- Class size and PTR are not the same, so they should not be confounded and reported as the same.
- For clarity and precision, research should contain clear definitions of computation and determination of the variables so that CS and PTR are kept distinct.
- Research efforts on both CS and PTR are useful. Research and evaluation on both should continue, separately.
- A concerted effort should be undertaken to educate the public, parents, researchers, policymakers, and the media on the differences between PTR and CS.
- Some “ideal” CS implementations need to be studied and evaluated to establish a substantial base of CSR data in which the event described is really a reduced-size class.
- State and federal agencies must advocate correct CS implementation through staff development and program guidelines. Agency documents and information on PTR and CS should both define and use the terms explicitly. ☞

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# Building a Communication/Dissemination Network to Support Class Size Reduction

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Though class size reduction (CSR) clearly benefits teaching and learning, so far this reform has not been widely adopted. CSR promoters agree that more effective dissemination of knowledge on small classes' benefits is needed to advance implementation of CSR policy and practice. This paper sketches a framework for developing an information-dissemination network for CSR. Suggestions are given for increasing awareness and practical knowledge of CSR among educators, policymakers, and the wider community and for changing attitudes toward the reform. It is also argued that a CSR dissemination network must target its audiences and messages, use technology to organize information, and provide personal communication channels.

## Raising Awareness

An effective dissemination network must increase awareness and "how-to" knowledge of CSR. While awareness includes research on CSR effects, policies, and perceptions, how-to knowledge provides specific guidelines for implementing CSR practices. Awareness can be crucial in laying groundwork for wider implementation, but the considerable research on the reform remains largely unknown among key stakeholders.

One way to increase awareness of CSR would entail developing a national network of stakeholders, uniting researchers, administrators, teachers, and parents to gain awareness of existing research and practice and to share experiences. Many state education departments, teacher unions, and school districts with detailed information on CSR efforts and effects are currently isolated.

However, if connected nationally, they could develop awareness of the implications of CSR for fiscal allocation, school and classroom management, teacher hiring, and student achievement. Successful models for raising awareness have used accessible research analyses, focused messages, and varied methods for engaging constituents.

## Increasing How-to Knowledge

CSR research, though widely disseminated through scholarly publications, must be translated into practical knowledge to show decision makers and practitioners how to reduce class size effectively. The complexity of the research makes it difficult to communicate findings in practical formats that can have direct and immediate influence.

CSR advocates can capture how-to knowledge by serving as information brokers for policymakers and practitioners. Information brokerage has been practiced effectively in other reform efforts by linking community leaders to the best research and practices through newsletters, consulting, and national conferences that bridge the gap between community leaders and the best research and practices. Although no national brokerage exists for CSR, one urban, CSR-related collaboration performs brokerage by bringing together teachers with differing knowledge and experience to share how-to knowledge. Such work could be extended nationwide by developing mechanisms for bringing together constituents with varying expertise to develop small-class strategies and guidelines for direct implementation. Further, online discussion groups could be established between researchers and

practitioners and between schools involved in reform, providing website visitors with applicable knowledge of what works to reform schools.

## Changing Attitudes

Well-established attitudes about a policy influence the speed, accuracy, and degree of approval with which people react to new information about it. While such attitudes help people notice and process new data, they are difficult to change; new knowledge leads less to replacing old attitudes than simply to modifying them. Thus, CSR endorsement is likely to depend on previous knowledge and approval. Established attitudes can also skew CSR research findings. Contentious debate about the economic costs and benefits of reducing class size has demonstrated that equivalent data and analyses can yield different results that seem dependent on predispositions for or against CSR.

Given the established attitudes of education-reform critics against structural changes like CSR and in favor of classroom changes, CSR supporters should not argue for structural reform but instead illustrate that CSR creates classroom improvements. Those disseminating CSR information broadly should also consider the often conflicting attitudes toward school reforms and adapt communicative strategies accordingly.

## Targeting the Audience

An effective dissemination strategy for CSR should have goals like those of advertising: to remind, inform, and persuade different audiences through different media. CSR promoters must thus target information to address the chief pedagogical concerns of policymakers

and educators and must expect different responses among target groups. The way information on CSR is communicated should vary with the audience. Outreach should differ across state and local levels, geographic regions, and ethnic groups. A primary task for CSR advocates is to analyze audiences thoroughly in order to understand their information needs and preferred methods of communication.

Experience has indicated that dissemination partnerships can help in influencing large and varied target groups. Model partnerships strive to understand the manifold information needs of member organizations and to work within existing structures to reach the greatest number of constituents. Data from diverse sources are integrated, and information is tailored to specific group needs. Class-size reform could benefit from such audience-sensitive collaboration in gathering and distributing knowledge.

### Targeting the Message

Further, effective messages about CSR must be targeted to answer audiences' critical questions. To consider in aiming messages at school administrators and practitioners are questions like these:

- Under what conditions does CSR work best to produce student achievement gains?
- How should CSR address teaching quality through hiring practices, space allocations, and instructional strategies?
- For which students does CSR work best?
- For which teachers does CSR best facilitate improvement in instructional strategies?

Only after such questions are specifically answered can effective action be taken. For instance, since it seems that smaller classes work best for low-income and minority students,

information helping schools decide how to target CSR efforts at those students could be most useful. Targeted messages must also inform decision makers about influences of other education policies and of fiscal and community needs on CSR implementation. Messages aimed at school districts, for example, must relate CSR to districts' master plans and to other reform efforts, showing how CSR could complement these.

### Using Technology

Its many interconnected information sources make the World Wide Web an excellent means of disseminating targeted messages. However, Web information on reducing class size is not integrated as well as that on other policies. The variety of nonintegrated online resources available hampers quick identification of useful knowledge. Since people are most capable of understanding already-integrated information, it seems imperative to develop a comprehensive website for CSR, integrating knowledge and organizing it for different audiences, so that users can decide what information they need. Research has shown that practitioners are most likely to use scholarly information when it is presented as accessible literature reviews or guidelines. A CSR website should develop research summaries and best-practices guidelines that allow teachers to build professional development into daily work. It should also contain tools to help administrators make decisions about implementing CSR at various involvement levels. And like other effective education websites, the site should be free and provide links to full-text documents.

### Personalizing the Dissemination Network

Decisions to adopt an innovation depend on sustained interpersonal

connections. This suggests that CSR supporters must create interpersonal media for disseminating information. These might include

- professional development workshops and training institutes on CSR for teachers;
- teacher visitor programs;
- conference workshops and presentations on CSR; and
- policy forums on the benefits of reducing class size.

Such outreach and support activities could supplement technology in reaching target groups. Another important aspect of personalizing dissemination should be establishing contacts among those interested in CSR through online discussion groups. In personalizing messages about CSR, advocates should also recognize the influence of opinion leaders. Thus, connections should be created with national education organizations and trusted local education leaders whose authority enables them to effect school and community change. The networking recommended here could help establish such connections, as could the work of a national outreach director.

### Conclusion

A carefully designed dissemination network could promote broader CSR implementation, increasing knowledge about the reform while changing attitudes and behaviors of policymakers and practitioners. Knowledge should be disseminated in targeted messages. Existing networking practices model the change-inducing communication strategies that CSR reform needs. To address various audiences' information requirements through appropriate channels is daunting, but it is a challenge that must be met to transform CSR from a limited experiment to a widely adopted reform with benefits available to all students. ☞

# Professional Development and Support Needs of Class-Size Reduction Teachers

Gina M. Pannozzo and Jeremy D. Finn, State University of New York at Buffalo

The movement toward small classes has created a great increase in demand for new teachers, which has significantly affected professional development (PD) needs. Many teachers being placed in elementary classrooms are new to teaching and to their schools. Also, many veteran teachers are transferring from other settings to small classrooms. The instructional practices that may be ingrained from years of experience in those settings are not always current “best practice.” Programs for PD can help both new and veteran teachers enhance the benefits of small classes by taking advantage of the opportunities the class size provides.

## New Professional-Development Programs

The conditions under which class size reduction (CSR) is being practiced may require four types of support:

- *New Teacher Support.* Teachers hired to staff newly created small classes have often just completed teacher-training programs. The small-class placement may be their first full-time teaching position, allowing them little or no prior classroom experience to draw upon. The support that new teachers receive can determine whether the year will run smoothly and whether the benefits of small classes will be realized.
- *Refresher Courses.* Teachers with substantial experience, either in large classes or other teaching positions, may have developed methods that do not capitalize on the flexibility small classes provides. To maximize the benefits of small classes, experienced teachers may profit from refresher courses in the basic principles of individualized

instruction, assessment of student progress, and addressing individual learning problems with approaches not possible in a class with 30 students.

- *Courses on Nontraditional Classroom Organization.* The small-class movement has motivated districts to establish alternative classroom organizational models, such as team-taught classes and “push-in” or “pull-out” classes as alternatives to self-contained classrooms with one teacher and fewer than 20 pupils.
- *Courses on Experimental Programs.* Experimental programs of professional development can encourage teachers to explore the range of opportunities that small classes permit, perhaps enhancing pupils’ learning and learning-related behavior.

## Principles of Effective Professional Development

Much of the research identifying general principles of effective PD is summarized in a 1998 Organisation for Economic Co-operation and Development report, “Staying Ahead: In-service Training and Teacher Professional Development.” The report recommends that PD activity

- be connected to other aspects of school change;
- be consistent with the needs of teachers in the settings in which they teach;
- include information about why it is important, what it will accomplish, and how it should be implemented correctly;
- be connected to teachers’ current practices and instructional styles and demonstrate how those practices should be modi-

fied to attain desired objectives; and

- be sustained and ongoing within the real-life context of the classroom.

School administrators must be active in implementing and sustaining PD activity in their schools. Principals can learn to observe, evaluate, and provide feedback to teachers so they come to be viewed as partners in what happens in the classroom.

## Development and Support Needs of CSR Teachers

New teachers or those new to the small-class setting are likely to need two kinds of assistance: training in the use of classroom strategies shown to be effective and support in becoming acculturated to the school environment. Both of these supports can have a direct impact on their classroom functioning. Evaluation of the Buffalo CSR program identified three domains of classroom strategies in which small-class teachers may require assistance.

### APPROACHES TO IMPROVING INSTRUCTION AND ACHIEVEMENT

This refers specifically to improving teachers’ capacities to engage students actively in the learning process and to encourage them to become independent learners. Instructional strategies include small-group instruction, cooperative learning, scaffolding, and strategies that emphasize problem solving and higher order thinking skills. Professional-development programs can hone teachers’ sensitivity to individual learning problems and increase their skills in working with lower achieving students. Both veteran and novice teachers can benefit from PD targeted

at improving instruction and achievement. Veteran teachers, while they may have used these techniques in teaching larger classes, may need to reframe them for effective use in smaller classes. Novice teachers, while they may be familiar with some of the techniques in theory, can benefit from workshops to help put them into practice.

#### ESTABLISHMENT OF A PRODUCTIVE CLASSROOM ENVIRONMENT

This refers to improving teachers' capacities to structure an orderly classroom environment where the learning process is valued and where students receive respect and support from each other and from the teacher. It involves effective use of the classroom space, use of effective behavior management techniques, and a focus on teacher-student and student-student relationships. Small classes provide real advantages in this domain. Veteran teachers may have developed good skills in this domain but could not practice them because of larger class sizes; professional development allows them to rediscover these skills and learn new ones. For novices, the greatest struggle is often developing effective methods of managing disruptive behavior. Targeted PD can help them learn more effective behavior management techniques so they feel less overwhelmed by disruptions.

#### EFFECTIVE ASSESSMENT OF PUPIL LEARNING

Focused PD in the domain of effective assessment strategies can enhance teachers' skills in evaluating student performance, with the objective of guiding instruction. It should include basic principles of achievement testing and the appropriate use of techniques like portfolio and

performance assessment. These approaches reflect and encourage teaching and learning at higher cognitive levels. Teachers of small classes have greater opportunity to use a variety of assessment techniques. Small classes offer teachers the time to monitor student progress continually and make it more practical to employ hands-on activities. In this area, novice teachers are likely to be more familiar with alternate forms of assessment than some veterans, if these topics were emphasized in teacher-education programs.

#### PROFESSIONAL SUPPORT FOR CSR TEACHERS

Teachers participating in a new initiative need information about the program itself, their roles, and the expected outcomes. Such support can be provided through practices orienting teachers to the program and keeping them continually informed. Without this information, teachers may feel disenfranchised and work with only a vague sense of purpose. With it, they may experience more commitment to their jobs and to the program, whether it is CSR or some other initiative.

New teachers may need assistance adjusting to the school environment and the "nuts and bolts" of teaching. This may seem a minor issue, but teachers can be incapacitated without basic information about daily schedules, classroom routines, finding classroom supplies, accomplishing simple clerical tasks, or performing expected administrative tasks. Moreover, newly hired teachers often have minimal experience developing lesson plans, organizing classrooms, and controlling pupils with severe behavior problems.

Perhaps the most effective way to support new teachers is through school- or district-level mentoring programs, which involve pairing of experienced teachers with novices for various purposes. In more formal programs, mentors observe and

comment on the novice's teaching and may provide opportunities for the novice to observe the mentor as well.

All teachers—but especially new ones—can benefit from exchange of ideas, experiences, and information with colleagues and administrators. It is incumbent on schools undertaking CSR to give teachers opportunities to meet and collaborate with colleagues teaching in the same classroom configuration, to provide regular opportunities for teachers to discuss problems with their colleagues and administrators without fear of retribution, and to receive feedback and recognition from colleagues and administrators alike.

#### Recommendations

New teachers in CSR programs can benefit especially from focused PD and supportive interactions with their colleagues. The following recommendations are directed to teachers, administrators, and researchers.

- When implementing PD programs, choose carefully. Not all topics and not all workshops are of equal value to all groups of teachers. Choose those most directly related to teaching and classroom management in the settings in which teachers are placed.
- Provide professional support for both novice and experienced teachers placed in small-class settings in order to ensure effective instruction.
- Establish a research program on actual and potential benefits of PD programs for teachers of small classes.
- Ensure that researchers and practitioners concerned with CSR ask what opportunities small classes present to do things differently. ☞

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# Students' Sense of Community:

## Implications for Class Size

*Helen Vrailas Bateman, Vanderbilt University*

The American educational system today is faced with a major challenge related to the level of students' academic and cognitive skills. Graduates must compete for jobs requiring a solid foundation in literacy, math, science, writing, and technological skills as well as expertise in critical thinking, reasoning, and decision making. Data from the U.S. Department of Education's National Assessment of Educational Progress indicate that although average proficiency in science, mathematics, and writing in 1992 was slightly higher than in 1988, achievement failed to keep pace with the higher skill level required in a global economy.

Another major challenge relates to the lack of fit between students' developmental needs and traditional school environments. Students in a grade may be in different stages of cognitive and emotional development. Learning and social needs of students in a class may be very diverse because of differences in previous knowledge, skills, and culture.

An additional challenge relates to the lack of social skills and pro-social behavior in our schools. Changes in the structure and cohesiveness of families and communities have left many children with less positive social support and less adult guidance.

These academic and social issues have yielded increased calls for reconceptualizing the student goals, teachers' roles in learning, and the structure and function of learning environments. An area of research addressing some of these issues conceptualizes classrooms as communities of learners. This concept stems from an appreciation of the

complex, dynamic interdependence between the student and the classroom as a whole. The classroom community can be examined from multiple perspectives, such as the teachers' and students' senses of community and the classroom characteristics that foster community.

This study examines the classroom community through Seymour Sarason's work on the psychological sense of community—the perception of similarity to others and of acknowledged interdependence.

### Psychological Sense of Community in Schools

Sarason argued that the traditional classroom should be restructured to provide students with an environment that nurtures their acquisition and development of academic and social/affective skills. Community-building processes in schools and classrooms are increasingly seen as profoundly affecting students' attitudes about school and learning, their social skills, and their social behavior.

Although their approaches to the sense of community vary somewhat, researchers are increasingly identifying bonding to social environments like schools, which provide norms and skills that oppose high-risk behaviors, as instrumental in increasing students' resiliency. Research indicates that school communities that provide students with a school or classroom sense of belonging, educational engagement, and support are most effective in retaining high-risk youths and are associated with academic motivation, interest, and expectations of success.

Despite the growing interest in community building as a means to

improve children's learning environments, very few studies to date have attempted to systematically examine the contribution of learning environments to students' sense of community, the classroom structures and mechanisms promoting that sense of community, the process by which students' sense of community develops, and the relationship of that process to the development of social and academic skills. Important questions remained unanswered: What are the mechanisms through which students' sense of classroom community can increase? What conditions make some classroom communities more effective than others?

### Small Class Size Can Facilitate Classroom Community

No research to date has examined the relationship between small class size and students' sense of community. This report explores mechanisms through which class size reduction can facilitate building and sustaining classroom community.

#### MEMBERSHIP IN THE CLASSROOM COMMUNITY

The key to feelings of belonging in a community is the level of personal investment in the community processes. The harder one works and the more resources one invests, the more valuable and meaningful community membership becomes. In the learning-community classroom, all students participate in a rigorous learning process that continuously challenges them by requiring deep levels of inquiry. Students must use active, strategic learning, reflect on their learning, and monitor comprehension. They must

invest considerable effort in acquiring expertise in different areas of research throughout the year.

Evidence indicates that small class size can powerfully promote students' membership in the classroom by making them more active and frequent participants in the learning process. Class-size reduction research indicates that students in small classrooms—especially those of lower ability—get more opportunities to participate actively in classroom processes.

Students in the learning-community classroom are expected to effectively communicate, share, and teach their knowledge to others and to apply knowledge toward the common goals of the classroom. Reduced class size has been associated with increased opportunities for collaboration in groups that are small enough to enable all students to actively participate in each group.

#### STUDENT INFLUENCE

In the learning-community classroom, every student is an integral part of the learning experience. Through the process of distributed expertise, all students become experts in a domain of knowledge, and their peers depend on them for knowledge and understanding of that area. Conversely, students depend on the rest of the group for their understanding of other areas of expertise. This bidirectional influence bonds each individual to the classroom community.

In small classes, each student gets more individual attention from the teacher and more opportunities to participate in group lessons with fellow students. These increased opportunities can facilitate the development of expertise and academic and social competence for all students in the class, not just a select few.

#### INTEGRATION AND FULFILLMENT OF NEEDS

In the learning-community classroom, students' learning needs are facilitated and enriched by teachers and peers. The continuous exchange of ideas through various means of discourse allows students to benefit from the common knowledge base and to selectively incorporate the information they feel they need. Research indicates that in small classrooms, students' individual needs can be better met. In addition, in small classes the contributions of individual students toward common goals can become more salient and instrumental, establishing them as valued members in the classroom community. In a small classroom, students have increased opportunities to contribute toward common goals either through the individual work they share with their classmates or through increased participation in small groups.

Moreover, in small classrooms teachers have more time to better address each student's unique learning and social needs. Instruction anchored in authentic problems provides students with relevant and interesting curricula. Students' needs for autonomy, engaging and challenging activities, social support, and a social comfort zone can be better met through the structure and activities facilitated by a small classroom.

#### SHARED EMOTIONAL CONNECTIONS

As community members share a common history, an emotional bond is gradually created among them. The formation of such bonds can be facilitated by small class size. Research indicates that students in small classrooms report lower levels of antisocial behavior and higher affective evaluations of their peers. Increased

collaboration toward common goals in a safe environment should provide students in smaller classrooms with higher levels of shared emotional connection.

Reducing class size is not a panacea for all that ails our classes today. It can, however, act as a facilitator to build and sustain strong classroom communities. The use of the educational practices that have been shown to be effective community-building tools is significantly aided and amplified through the reduction in class size. ☘

### The CEIC *REVIEW*

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*Editors*

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