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## ABSTRACT

This study examined the impact of smaller class size on elementary student achievement, focusing on types of instructional strategies utilized, student time on task, academic focus of the classroom, and types of interactions between teachers and students and between students and students. Two long-term class size reduction sites in North Carolina were used for the evaluation. Researchers used three different observation instruments, including the School Observation Measure, an observation instrument that categorized teacher-student interactions, and an instrument that examined instructional practices, student groupings, support materials, teacher-student interactions, and classroom climate. Data analysis indicated that student time on task and academic focus were consistently high at these two sites. While direct instruction was the most common instructional strategy observed, teacher-student interactions in the form of teacher as coach and instructional feedback were also frequently observed. Smaller classrooms appeared to be supportive environments for student learning. They had a relaxed atmosphere, and teacher and student familiarity with one another extended beyond the classroom. (Contains 10 references.) (SM)

**Observing Life in Small-Class Size Classrooms**

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## Observing Life in Small-Class Size Classrooms

### Background

Researchers generally agree that smaller classes positively impact student achievement in the primary grades (Finn, McRobbie, and Harman, 1998). There is much less information as to the impact of smaller classes on changes in teacher behavior. While many class-size initiatives (e.g., California and Wisconsin) require professional development as part of class-size reduction, the few studies conducted to date (e.g., Filby, Cahen, McCutcheon, and Kyle, 1980; Molnar, et. al., 1999) have shown that teacher behavior does not dramatically change when they teach in smaller classes.

Little research has been also conducted on the impact of smaller classes on the school and classroom environment. Several studies have found that students are on-task more often in smaller classes (Achilles, Kiser-Kling, Aust, and Owen, 1994; Egelson, Harman, and Achilles, 1996). Another study (Bourke, 1986) found that student-teacher interactions occurred with greater frequency and were more protracted in smaller classes. Follow-up studies from Tennessee's STAR initiative (Finn, Folger, and Cox, 1991) found that students who had been in smaller classes were more motivated and took greater initiative than students experiencing larger classes.

As part of our ongoing effort in examining the potential impacts of smaller classes, we have recently begun to critically examine what happens to a school when it implements class-size reduction. Thus far, we have focused on two aspects of the classroom environment. The first is the types of instructional strategies being utilized,

student time-on task, and the academic focus of the classroom. The second aspect is the types of interactions that occur in small class size schools between students and teachers and between students and students and the purposes of the interactions observed.

### Data Sources

Two long-term class-size reduction sites in North Carolina have served as the basis for on-going evaluation over the past several years. The first site is a district that began reducing class sizes to 15 in 1991. Currently, all 17 elementary schools have class sizes of 15 in grades 1, 2, and 3. We have been evaluating this initiative since 1994. The second site is an elementary school that reduced class sizes to 15 in grades 1 through 4 beginning in the 1995-96 school year. We have evaluated this effort since the initiative's inception.

### Methodology

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 (Worthen, Sanders, and Fitzpatrick, 1997). Thus far, three different observation instruments have been used at these two sites. The first observation instrument we used was the School Observation Measure<sup>®</sup> developed by the Center for Research in Educational Policy (University of Memphis) and the AEL Regional Laboratory (Smith, Ross, Alberg, and Lowther, 1999). 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 second observation instrument, utilized at the elementary school, focused on categorizing student-teacher interactions. An observer sheet was created to guide observations, allowing notations concerning teacher-student, student-student, and student-teacher interactions. Each interaction was coded as instruction-oriented (receiving/providing assistance, guidance, or information), relationship-oriented (conversation and praise), or management-oriented (discipline and order). Each time an interaction was noted, it was marked on a sheet and the interaction written down. Observers randomly visited classrooms for 10 to 15 minutes each.

The third observation instrument, also utilized at the elementary school, focused on instructional practices, student grouping, support materials, teacher-student interactions, and classroom climate. Four observers stayed in a single classroom for four hours keeping track of activities and taking extensive notes. Each observer then provided extensive notes from their observation.

## Results

### **Site 1 – The District**

In October 1999, four observers visited the county to view first-, second-, and third-grade classrooms in five elementary schools in the district. Observers chose the schools based on state test results in math and reading. The five schools fell at all points on the test-score continuum, from the highest in the county to the very lowest. Eight-to-ten classrooms were visited in each school. A composite for each school was initially developed by determining the number of times an activity or practice was observed in first-, second-, and third-grade classrooms in a school.

The following information pertains to practices or activities that were observed in all schools in at least half the classrooms. These instructional strategies, with the exception of independent seatwork, have been shown to have large impacts on student achievement (Hattie, 1999). For example, meta-analytic studies have found that direct instruction has an average effect size of .82 and feedback (instructional feedback and teacher as coach) an effect size of .65.

- Direct instruction is provided to the entire class at one time and has an academic focus. Lecture format for delivering information is typical, and there is little student talk. In two schools, half the classroom teachers provided direct instruction; at one school, three-quarters of the classroom teachers did; and in two schools, all the classroom teachers did.

- Instructional feedback is the provision of answers to exercises and other information relative to progress in learning. It is not only the procedures for completing tasks but includes feedback that is rich and elaborative. In three schools, at least half the classroom teachers provided instructional feedback. In two schools, there was instructional feedback in at least three-quarters of the classrooms.
- Teacher as coach refers to roles that are more supporting, less directive, and less teacher-centered. The teacher serves as a guide rather than a presenter of information. At all five schools, teacher as coach was observed in at least half the classrooms.
- With independent seatwork, students are independently using worksheets, completing other assignments, or taking tests that provide review exercises, questions, and/or other activities to apply and practice the content they have studied. In four of the schools, independent seatwork took place at least half of the time. In one school, it was exhibited at least three-quarters of the time.

Across all schools, an emphasis is seen on teacher-student interaction in the form of teacher as coach and instructional feedback. Time on task associated with academically focused class time and level of student attention was also at a high level. This finding is consistent with earlier observations conducted previously in the district (Egelson, Harman, and Achilles, 1996).

## Site 2 – The Elementary School

Classrooms were observed in May 2000 to begin determining the typical instructional strategies employed in small-class-size classrooms. 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). A high level of academically focused time was observed in 17 of 19 classrooms. A high level of student engagement was observed in 10 classrooms, and a moderate level of student engagement was observed in nine classrooms.

Over the course of a week in the fall of 2000, four observers (two of whom were not familiar with the school) spent at least two hours each at the school observing in the hallways, the cafeteria, classrooms, and the media center. The following are vignettes of what was observed.

- ❖ An observer visited seven primary and intermediate classrooms. In each of the classrooms a teacher worked with one student at a time while the rest of the class was busy with class work. In all the rooms, the students were on task, and there were no behavior problems. Conversations among students related to academic matters (for example, “May I borrow a pencil?” “How do I do this paper?”). There was also plenty of teacher praise in each room (“That was really good.” “It will be fine.” “There you go!”). In one classroom, there was a student working on a computer. There were no observed student-initiated interactions with teachers.

- ❖ Another observer viewed five classrooms. A majority of these classrooms were in the intermediate building. In every classroom, children were well behaved and on task. There were no differences in classrooms where substitutes were teaching and those that had regular teachers. In all instances, teachers were either helping individual children with academic tasks or listening to children read aloud. No students were observed using a computer. In four of the classrooms, students were providing academic assistance to others.
  
- ❖ Several observers viewed teacher and student interactions in the hallways in the primary and intermediate buildings. In the primary building, the environment was very controlled in the hallways, and teacher comments related to student behavior (for example, “Wait in line.” “Go to the end of the line.” “Don’t do it.” “Please be quiet.” “Don’t run.”). Student conversation was at a minimum. In the intermediate building, children were coming in from recess and were quite loud. The teacher had to reprimand them. As a side note, the hallways of both buildings were decorated with brightly colored student work.
  
- ❖ The results of observations in the cafeteria varied depending on the time of day. Breakfast was rushed, with children being told to eat quickly so they could get to class. There was no talking. Lunchtime was a different story. The cafeteria was loud, and students were talking and visiting. Some children were observed doing their homework. The atmosphere was relaxed, and children were smiling. Adults did not have a need to discipline students.

- ❖ On the playground during recess, intermediate students organized their own soccer, kickball, and football games. There was also student socializing taking place on the sidelines. In the media center, a third-grade class checked out books. Students were well behaved and on task. Students read to each other while they sat on the couches and also demonstrated parallel reading.

In March 2002, four observers visited a classroom for a period of four hours to examine instructional practices, student grouping, support materials, teacher-student interactions, and classroom climate. The teachers were chosen because their students have consistently performed well on academic tests. (One teacher was certified by the National Board for Professional Teaching Standards.) A kindergarten, 2<sup>nd</sup> grade, 4<sup>th</sup> grade, and 5<sup>th</sup> grade teacher were observed. The goal of the observations was to begin to determine how these teachers were successful in achieving gains in student learning.

A number of commonalities emerged from the observations. All observers remarked on the smooth transitions between activities and the quick pace of instruction. This tempo seemed to occur because of how the teachers structured the classroom. There was a great deal of predictability in each classroom. The children knew what to expect from the teacher and what the next instructional activity was going to be. There was little “down time” and there was a high academic focus in each classroom.

All four teachers were observed focusing on students as individuals. Each teacher frequently monitored students’ progress by either working individually with students or checking in on a student as they completed an assignment. The teachers appeared to

respond to individual needs as a result of being aware of the level of each student. Each teacher also continually probed student understanding through questions. Questions were asked at several different levels, including contextual, higher-order, and interpretive. The teachers were also observed using tangible materials and teaching tools such as cookies, a bell, and eggs.

The observers noted that the students were engaged and involved in instructional activities. Little time was spent on classroom management. The children were well-behaved and minor infractions were addressed quickly without interrupting the flow of instruction. Students were observed asking questions and asking their teacher for feedback.

### Conclusions

Classroom observations at both sites showed that student time on task and academic focus were consistently high. While direct instruction was the most common instructional strategy observed, teacher-student interactions in the form of teacher as coach and instructional feedback were also frequently observed. Smaller classrooms appear to be a supportive environment for student learning. There is a relaxed atmosphere and teachers and students have familiarity with each other that extends beyond the classroom. Thus, the achievement benefits of smaller classes seen in previous evaluations would seem to accrue because of increased instructional time of both teacher and student, the monitoring of individual student progress, and the correction of individual work.

It is critical that evaluators and researchers continue to examine implementation issues and the potential benefits of smaller classes. Educators need the procedural knowledge necessary to successfully implement class-size reduction with many educators implementing or considering class-size reduction as a reform strategy. Discovering the types of impacts that can be expected to accrue from smaller classes is a vital step in that process.

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