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REDUCING CLASS SIZE: WHAT DO WE KNOW?

PREPARED BY DR. NINA BASCIA,
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CONTENTS



Foreword...2

Introduction...3

Overview of Major Findings and Conclusions...4

Class Size Reduction Policies and Initiatives...6

- Canadian Interest in Class Size Reduction...6
- Major U.S. Initiatives...7
- Primary Class Size Reduction in Ontario...8

The Impact of Class Size Reduction on Teaching and Learning...10

- Teacher-Student Interaction...10
- Pedagogical and Professional Practices...11
- The Impact of Related Policy Changes...12

The Considerations and Costs of Primary Class Size Reduction...13


- Impact on All Primary Children...13
- Impact on Teaching and Learning Beyond Primary Grades...13
- School District Leadership...14
- School-Level Leadership...14

Policy Implementation and Policy Coherence...16

- Recognizing Context Differences...16
- Resource Capacity...17
- Policy Coherence...17

Conclusion...19

FOREWORD



Smaller class sizes are an intuitively good idea. Both parents and teachers believe that smaller groups of students allow for more individual attention and result in higher achievement. In addition, teachers believe that smaller class sizes provide for more manageable classes and better relations with parents. After many studies of the impact of class size, and lively debate about their interpretation, a consensus has emerged that class size makes a small but useful improvement to achievement in the early grades. The impact is greater when accompanied by pedagogical change.

Because of its widespread popularity, reducing class size is a relatively straightforward policy initiative; its implementation, however, is complex because it affects utilization of classrooms, recruitment and allocation of teachers, and grouping of students, and may require the creation of split or combined grades in the primary and junior divisions.

In 2007 and 2008, the Canadian Education Association (CEA), through a contribution agreement with the Ontario Ministry of Education, conducted a study of Ontario's newly introduced class size reduction policy to provide a portrait of the teaching and learning environment created in smaller classes and to determine the policy's impacts, both intended and unintended. CEA contracted with a group of researchers from the Ontario Institute for Studies in Education, University of Toronto, to undertake this research on its behalf. The research team reviewed the literature, analyzed statistical data, conducted field research in eight Ontario school districts, and surveyed parents. The final report was approved by the Ontario Ministry of Education in 2009.

The research will be of interest to school districts and departments/ministries of education in other jurisdictions. Although the study focused on Ontario, we believe that key stakeholder groups across the country will find it valuable. This report enhances our knowledge of policy implementation at the district and school levels, and provides insights into how to maximize the positive impact of class size reduction policies directed at elementary schools.

We appreciate the participation of the Ontario school districts and parents that took part in the study, and trust that readers will find this report useful and informative.



Penny Milton
Chief Executive Officer
Canadian Education Association

INTRODUCTION



This report provides an overview of findings from the research on primary class size reduction as a strategy to improve student learning. Its purpose is to provide a comprehensive and balanced picture of a very popular educational reform strategy that has often been seen as a “quick fix” for improving students’ opportunities to learn in schools. The report draws from a comprehensive review of the body of research on class size reduction in Canada and the United States, describes recent Canadian trends in class size reduction, and identifies the major findings and conclusions from a recent study of Ontario’s Primary Class Size Reduction (PCS) initiative.

Concentrating on the Ontario initiative, the report describes the policy context that gave rise to primary class size reduction and the province’s implementation strategy. It summarizes the impact of primary class size reduction on teaching and learning and on the work of administrators in schools and school districts.

The study was designed to provide information on the existing research about class size reduction; broad province-wide trends in terms of costs and achievements; direction provided by school districts and principals during implementation; changes in students’ and teachers’ experiences of teaching and learning; parents’ perception of primary class size reduction; the intersection of class size reduction policies with other policy initiatives; and recommendations for policies or programs to maximize the benefits from class size.

The research team reviewed the research base and analyzed statistical data collected by the Ministry of Education between 2003-04 and 2007-08. Much of the study involved field research in eight school districts, 24 schools, and 84 classrooms. Classroom observations were undertaken at each primary grade level, from Kindergarten to Grade 3 (K-3). All teachers were surveyed in each school. Parent surveys included representation from every school district in Ontario.

OVERVIEW OF MAJOR FINDINGS AND CONCLUSIONS



Class size reduction is a very attractive educational improvement strategy. Parents believe their children learn more and are more engaged in smaller classes. Teachers believe they can pay greater attention to individual students, assess them more appropriately, reflect more thoughtfully on their practice, and respond more effectively to student needs when classes are smaller. It is no wonder that class size reduction is a popular educational reform. But this is an intuitive response. What does the research actually say? While the large literature base on class size reduction includes some contradictory research interpretations, it also includes a number of relatively robust findings.

The research confirms that class size reduction does provide the environment in which teachers can teach differently. In smaller classes, they interact with individual students more frequently and use a greater variety of instructional strategies. They can create more opportunities for higher-order co-construction of meaning by students. They also may spend out-of-classroom work time on more creative planning (and less on routine marking), and they may interact more frequently with other teachers and adults in support of classroom teaching.

The research on student outcomes and behaviour tends to support teachers' beliefs that they can teach more competently and effectively in smaller classes. In smaller classes, students learn more academically and socially; they are more engaged and less disruptive. Even when it is not evident that teachers have significantly changed their instructional activities, student learning may improve, engagement may increase, and "behavioural problems" may decrease. These improvements may be partially explained by an increase in physical classroom space per student, providing more opportunities for movement, different grouping strategies, and interaction among students and between students and teachers.

But the research also suggests that the full gains of class size reduction cannot be achieved if it is implemented without paying attention to other factors that support innovative practice. Some of the most important factors include the ways in which teachers and students work together; the curriculum in use; and teachers' opportunities to learn new teaching strategies.

There are significant costs associated with reducing class size. Failing to account for these costs may compromise the quality of the reform and may even have a negative impact on other academic priorities. Some of the costs identified in the research include quality classroom space (that does not result in lack of adequate space for other activities); the availability of a pool of good teachers; opportunities for teachers to learn new instructional strategies (including training and time to practice and get comfortable with them); proximity to other educational staff; and instructional resources (both materials and human expertise).

The effective implementation of primary class size reduction also requires attention to policy coherence, taking into account the interactive and interconnected nature of many aspects of educational practice, across settings and grade levels. To achieve policy coherence, educators need to understand that policy initiatives do not occur on the ground as discrete events, but interact with other initiatives in operation at the same

time, as well as with the effects of past policies. For example, Ontario's PCS initiative was implemented simultaneously with efforts to improve literacy and numeracy instruction, as well as increased professional learning opportunities for improving instruction for special education students. At the same time, the educators interviewed for the study identified the continuing influence of policy changes from up to a decade earlier, including a new elementary curriculum, changes in educational funding, and provincial government student assessment practices.

CLASS SIZE REDUCTION POLICIES AND INITIATIVES



There has been a great deal of interest in class size reduction as a policy strategy, across Canada, in the U.S., and elsewhere.

CANADIAN INTEREST IN CLASS SIZE REDUCTION

Primary class size reduction has been an active concern in most Canadian provinces and territories over the past decade, articulated by a number of different policy players, including ministries of education, premiers, legislators, provincial teachers' federations, and local school districts. The form and intensity of that concern has varied from province to province, ranging from conducting preliminary research to legislating class size maximums.

A number of provinces have consistently made comprehensive class size reduction a priority: Alberta, British Columbia, Newfoundland and Labrador, Ontario, Prince Edward Island, and Quebec. In many of these provinces, declining enrolment in some local jurisdictions has allowed provincial government dollars to stretch farther toward achieving the goal of primary class size reduction. Where local districts continue to maintain decision-making authority about resource allocation, class size reduction has been a focus in at least some districts. Actual class size targets vary by province, ranging from 17 in kindergarten in Alberta, to 20 in primary grades in Newfoundland, Ontario, and Prince Edward Island, and 30 in Grade 3 in New Brunswick. In all of these jurisdictions, acceptable class size limits are greater as the grade level rises, reflecting the belief that scarce resources should be concentrated at the primary years for optimal student learning.

Quebec introduced a class size reduction policy in 2000 in preschool and Primary Cycle 1 (Grades 1 and 2).. This policy was intended to provide teachers with greater flexibility for the early detection of students with learning disabilities and special needs. Close to 2,000 additional teachers have since been hired in support of this program, which is currently under evaluation.

There have been three Canadian studies on the implementation of primary class size reduction and its effects on teaching and learning. The earliest was a two-year experimental study conducted in metropolitan Toronto in the late 1970s. Researchers compared four class sizes (15, 23, 30 and 37) with respect to teacher expectations, student achievement, and student engagement. Researchers found that class size had no effect on teacher-student interactions and teaching methods, or on student satisfaction. They also found no differences in student achievement scores, except in the case of math concepts, where students in the smallest classes scored significantly higher than their peers in the two largest classes. However, teachers in the two smaller classes did report more individualized instruction, improved student behaviour, and a more manageable workload.

In 1999, Alberta Learning, Edmonton Public Schools, and the University of Alberta Faculty of Education formed a partnership to design and implement class size reduction in ten "high-needs" schools in Edmonton. The project's purpose was to examine the impact of small class size (15 or fewer) on student growth and achievement

in Grade 1. Teachers in the project were involved in two types of professional development: one focusing on balanced literacy and the other on sharing information about teaching strategies and examples of student work with University of Alberta faculty on a monthly basis. The academic progress of the students, using various standardized tests, showed substantial gains, even within a short time frame.

The data from the Alberta study suggest that teachers in the project were able to individualize their teaching; develop a productive learning environment; integrate reading, writing, and speaking; use hands-on activities; and support student personal skill development. Teachers reported minimal student classroom behaviour issues, including noise level, and a high level of student concentration on their work. In interviews, parents indicated that they were pleased that they could meet with teachers frequently and that their children could receive extra attention when they needed it. Teachers expressed satisfaction with their work and felt confident that they could identify and meet the learning needs of their students.

The third Canadian study, the Ontario PCS initiative, is discussed in detail later in this report.

MAJOR U.S. INITIATIVES

Several large-scale research studies on primary class size reduction in the U.S. reveal a wide range of program strategies, as well as differences in emphasis. Each study concentrated on – and ignored – different factors.

Tennessee

Tennessee's Student-Teacher Achievement Ratio (STAR) was studied to determine the effects of class size reduction on student academic achievement in literacy and mathematics from Kindergarten through Grade 3. In STAR schools, students were randomly assigned to either small classes (13-17 students per teacher); a control group (22-25 students per teacher); or classes with full-time teacher aides and 22-25 students. Teachers were also randomly assigned to one of the three class types, as were new students, according to existing vacancies. The researchers also varied levels of in-service training offered to teachers – including no training at all – to help them take advantage of the instructional opportunities of small classes.

Two of the study's findings have had a major influence on class size initiative design internationally. First, researchers found that some of the benefits of small classes were greater for minority students than for non-minorities, and greater for students attending inner-city schools than for those attending suburban and rural schools. This finding has led policy-makers to argue that primary class size reduction can “reduce the achievement gap” between minority and non-minority students. Second, STAR researchers have claimed that the effects of small classes persist over time – still significant in Grade 8, even when small classes run only through Grade 3.

Many have criticized the STAR project, including researchers who claim that politics and “self-interest” have coloured the findings, that teachers and students in the experimental groups tried harder than those in the control groups to increase student academic achievement, and that the sample in the STAR project was not typical or representative of the U.S. population. In fact, researchers in the field are widely divided about whether further experiments on class size reduction are likely to provide evidence of high-enough quality to inform policy. Despite these criticisms, STAR continues to provide the most widely-touted evidence that primary class size is a worthwhile investment of public funds.

Wisconsin

Wisconsin's Student Achievement Guarantee in Education (SAGE) focused on low-income and minority students, beginning in 1996-97. The SAGE strategy reduced the pupil-teacher ratio within a classroom to 15 students per teacher, and also established "lighted school-houses," open from early in the morning until late in the evening, developed "rigorous" curricula, and created a system of staff development and professional accountability. SAGE included five different classroom configurations with varying numbers of students per teacher.

SAGE research reported significantly higher achievement test scores among SAGE students than those in comparison schools, in mathematics, reading, and language arts¹ – an estimated one-third to one-half of a school year's growth. The study reported that the program narrowed the Black-White achievement gap in Grade 1 by as much as 38%, and that it prevented the gap from widening in Grades 2 and 3.

California

In 1996-97, California voluntarily reduced K-3 classes to 20 students per class. This research is by far the most thorough in terms of implementation issues and the most critical in the entire body of literature on class size reduction.

Some studies of this initiative report positive effects, including minimal gains in test scores after the second and third year, more time for teaching, less time spent on discipline, and more parent-teacher interactions. Grade 3 students enrolled in reduced-size classes performed better on standardized achievement tests than did students in regular classes, and this gain persisted after the students moved to larger Grade 4 classes. This finding applied to all students, regardless of socio-economic background, fluency in English, or ethnicity/race.

However, the evaluation report noted that most school districts faced budget shortfalls as a result of class size reduction, and many took dollars from other programs to support its implementation, including resources for teacher professional learning, computers, and library programs. The program's demand for additional classroom space led to the conversion of special education rooms, libraries, auditoriums, and childcare spaces into classrooms. The hardest-hit schools were those serving poor children and English-language learners. In a larger job market for teachers, some qualified teachers left schools serving poor children and transferred to more affluent schools, leaving less advantaged schools scrambling for teachers. As a result – and perhaps most devastating – most of the unqualified teachers hired on an emergency basis ended up teaching in schools that serve racial minorities and English-language learners. Because so many of the teachers were inexperienced and lacked credentials, there was a great need for in-service programs, but the evidence suggests that neither new nor experienced teachers received significant professional development.

PRIMARY CLASS SIZE REDUCTION IN ONTARIO

The PCS initiative was one of the Ontario Liberal Party's provincial campaign promises in 2003. Out of 50 educational priorities stated in its election platform, PCS was mentioned second.

PCS sprang into being as a specific, well-defined election promise that immediately became a provincial government objective. But while reducing primary class size may have been perceived as a simple and obvious

¹ Molnar, A., Smith, P., & Zahorik, J. (1998). 1997-98 results of SAGE program evaluation. Tempe, Arizona: Education Policy Studies Laboratory.

idea in its inception, its implementation proved to be a significant undertaking throughout the educational system. Ministry of Education staff needed to consider whole new funding categories, develop new databases, and gather information that had not previously been gathered. For example, they needed to review space on a school-by-school basis to determine capital funding requirements and track actual class sizes annually, by grade and school, for every Ontario school that includes primary grades. Putting the Class Size Tracker online and making it publicly accessible was a powerful way to encourage school district compliance because it gave parents and the public access to information about how well districts were reaching provincial targets.

Ontario's PCS initiative rolled out over a four-year period. Money was made available incrementally to support 1,200 new teachers per year between 2004-05 and 2007-08, and to secure new classroom space. In 2006, the Ministry of Education issued memoranda to school districts requiring 100% of all primary classes to have 23 or fewer students for the 2006-07 school year, and to be prepared for a "hard cap" of at least 90% of 20 or fewer students in at least 90% of primary classes in 2007-08.

By the 2008-09 school year – right on target – the Ontario government's goals had been achieved: over 90% of all primary classes had 20 or fewer students, and all primary classes had 23 or fewer students. This was a remarkable achievement, given the magnitude of the task.

THE IMPACT OF CLASS SIZE REDUCTION ON TEACHING AND LEARNING



As can be seen from the previous summary of existing class size reduction studies, there is no robust understanding of exactly *how* class size reduction works to improve student learning. The Ontario PCS study was designed to fill in some of the gaps by gathering many kinds of data to describe not only classroom activities, but also school-level activities beyond the classroom, implementation strategies, and broad effects on students and teachers.

Teachers' comments and researchers' observations suggest that class size reduction represents an opportunity for improved teacher-student interaction and for the implementation of innovative pedagogical and professional practices.

TEACHER-STUDENT INTERACTION

The Ontario study reinforced many of the findings of other class size reduction studies with respect to teacher-student interaction. Nearly three-quarters of the primary teachers reported that the quality of their relationships with students had improved as a result of the smaller class size, and two-thirds said their students were more engaged in learning than before class size reduction. Primary teachers told the researchers that smaller primary classes gave them more time to help individual students experiencing learning difficulties and allowed them to carry out intensive, focused, teacher-guided activities effectively.

During group learning, the smaller groupings made possible by smaller classes enabled the teacher to be more aware of, and to encourage, each student's individual participation. Primary teachers noted that they felt better able to monitor children's activities during work time, compared with larger classes where student behaviour might go unnoticed for a longer period of time. The more spacious classrooms often allowed for a dedicated location where the teacher could interact with one or a few students while the others worked independently on other activities.

Improvement in student-teacher interaction appeared to contribute to improved classroom behaviour, as well. Teachers reported that students were calmer than in the past, a fact they attributed to easier and more frequent access to adult attention. Over half observed that peer relationships within the classroom improved, probably another benefit of reduced competition for adult attention.

There may also be child safety benefits to smaller classes. For example, in one context where students and teachers were rehearsing a lock-down drill, smaller classes were seen by teachers as important to ensuring a quick emergency response to account for all children. Similarly, teachers found it easier to keep track of young children leaving the classroom to line up in the hallway to use the washrooms and to supervise students on class excursions outside of the school.

PEDAGOGICAL AND PROFESSIONAL PRACTICES

Evidence from the Ontario study confirms that smaller classes have the potential to move primary teaching and learning toward more child-centered, child-directed, communicative, exploratory instruction, encouraging students to create learning content and processes along with the teacher (i.e., “co-construction”). Although primary class size reduction has not resulted in universal improvement, researchers saw evidence of significant change, which they attributed to smaller class size.

Teachers reported that smaller classes allowed them to make better use of proven instructional strategies: nearly three-quarters of the teachers in the study identified increases in small-group work and differentiated instruction. Children in the early years were given more opportunities during “circle time” to recount recent personal experiences and to develop vocabulary and pragmatic skills such as turn-taking and politeness. Primary teachers were able to more effectively employ strategies that encourage students to derive deeper meaning from what they read, such as encouraging them to share their ideas or responses to texts read by the teacher, sometimes explicitly referring to “text to text” and “text to self” connections.

Teachers also noted that reduced class size allowed them to spend less time on routine tasks like marking student work, and enabled them to pay attention to and reflect upon the kinds of learning strategies that might represent effective responses to students’ learning challenges.

To some extent, the instructional strategies that teachers used varied according to a number of other factors including the following: the school district’s overall orientation toward literacy learning; class composition; teacher personality; the teacher’s prior experience with the particular grade level; single versus combined grade classes; and the perceived ability levels of the students. While teachers may have gained awareness of more student-centered or student-directed approaches to literacy instruction, not all teachers were implementing these approaches in practice, even in smaller classes. Some who expressed interest in new approaches were concerned that they would lose control of the class without the structure of a teacher-directed, teacher-centered approach.

The PCS initiative increased the level of individualized instruction for students with special educational needs in regular primary classes – especially for those identified with learning difficulties in reading and writing. However, researchers noted that teachers tended to use less differentiated instruction when they worked in classes with students from lower income, racial minority, and immigrant backgrounds. In their interviews, teachers described such students as less academically able, and indicated that their instructional strategies emphasized discrete skills associated with the transmission of basic facts and concepts rather than the development of higher-order skills, even in working with small groups of students.

Based on these findings, researchers noted that an important next step in implementation was to ensure the same quality of education for all students, allowing for a variety of learning styles, background knowledge, interests, trajectories, and multiple intelligences.

Many parents of children enrolled in smaller classes reported that their children appeared to be learning more and were more comfortable at school: between 20% and 30% of parents who responded to the on-line survey reported fewer learning difficulties, fewer behavioural challenges, more positive social interactions, and greater engagement in learning. The same proportion of parents perceived that teachers were more able to meet particular educational needs and detect and resolve any problems, and that the quality of their own relationship with teachers had improved. In the Ontario study, parents of primary grade children (including

parents of children with special education needs) had many positive things to say about PCS:

Clearly see impact of increased focus on my child's challenges. Teacher quickly identified some mild reading and writing challenges and addressed them early in the year.

The staff knew my child's strengths and areas to improve and I think this was due in part to the smaller class size.

We're seeing more bullying at the earlier grades (kindergarten and grade one). Reducing class size ...can help to allow the teacher more time to establish a stronger sense of community and belonging within the classroom which can, in turn, help to reduce the number of incidents of bullying.

THE IMPACT OF RELATED POLICY CHANGES

It is important to recognize that class size reduction was not the only change affecting teaching and learning in primary classrooms in Ontario. The province's Literacy and Numeracy strategy clearly had a lot to do with the instructional strategies teachers demonstrated. Provincial efforts to support teacher development in the area of special education instruction within regular classrooms also appeared to have a positive effect on teaching.

In fact, class size reduction appeared to create a "halo effect" for primary teaching and learning – that is, it appeared that instructional resources were being funneled toward supporting primary classrooms in ways that further enhanced the quality of teaching and learning. For example, many primary teachers reported that their working conditions had improved in ways unrelated to class size: some reported that they had greater access to, and interaction with, specialized staff; and researchers' field visits revealed that special education resource teachers and literacy coaches tended to focus their time and attention on primary classrooms.

An increase in collaboration can also be attributed to the combined effect of several initiatives, including PCS. Primary teachers were more likely to team-teach and collaborate with colleagues, and teachers in several schools said that PCS facilitated the work of professional learning communities (PLCs), enabling them to better examine the needs of particular students. In one school, for example, teachers met weekly to do the following: track the achievement of each child on a large chart that related the results of evaluations; focus on improving writing communication; and discuss strategies for better addressing student needs across the school. One of the legacies of these meetings was a collection of resources that could be shared among staff members. In another school, professional learning communities supported an ongoing process of critical teacher reflection with respect to best practices.

THE CONSIDERATIONS AND COSTS OF PRIMARY CLASS SIZE REDUCATION



Ontario's PCS initiative appears to enhance the teaching and learning environment in the primary grades. But researchers also identified several areas of concern that suggest class size reduction must be undertaken with careful attention to a number of factors that affect not only the success of the initiative but also its consequences on other educational priorities.

IMPACT ON ALL PRIMARY CHILDREN

As suggested in the last section, class size reduction did not occur in isolation: Ontario had also devoted resources toward helping teachers develop skills in literacy and numeracy instruction and in meeting the needs of students in special education. Classroom observations, parents' survey responses, and teacher interviews all suggest that these three initiatives worked well together in practice. One area of concern, however, was the observation by researchers that teachers had yet to take full advantage of smaller classes to provide rich learning opportunities for students from lower income, racial minority, and immigrant backgrounds. While reducing the "achievement gap" is an Ontario government priority, the specific development of equity strategies occurred subsequent to the study. Hopefully, these strategies will enhance learning opportunities for students from traditionally less academically successful groups.

IMPACT ON TEACHING AND LEARNING BEYOND PRIMARY GRADES

On average, classes in Grades 4–8 did not increase in size (and, in fact, appear to have decreased slightly across the province). In our field research sample, high junior and intermediate class sizes tended to occur in growing school boards and in larger elementary schools. These actual class sizes are masked when officials concentrate on school board and provincial averages. On the ground, however, larger junior and intermediate classes in some schools and boards are difficult realities for students and teachers. Class size appears to have some bearing on teachers' and principals' expressed concerns about junior and intermediate teaching and learning conditions. We do not know whether these concerns are primarily due to the very recent and obvious difference in class sizes at the primary level, or to other factors, such as the challenges upper-grade teachers faced in attempting to implement instructional strategies associated with the Literacy and Numeracy Strategy, or whether a combination of factors have redirected limited instructional resources toward primary and away from junior and intermediate grades.

SCHOOL DISTRICT LEADERSHIP

While there is no question that primary class size reduction was achieved in nearly every school in the province by targeted timelines, compliance with these timelines may have pre-empted the province's goals around instructional improvement.

In order to achieve compliance, initial implementation of the PCS policy required a strong managerial focus (staff allocation, facilities planning) rather than an instructional focus. The direction and support provided by school districts to schools focused primarily on the district's planning and monitoring to ensure compliance with the policy. Most of the districts visited were fairly directive: not only did they have to ensure that no school received more than its allocation of teachers, but many required all elementary schools to organize all classes to include more than one grade level, in order to allow for flexibility in placing students who might arrive unexpectedly at the school early in the school year.

Aside from some mentions of links to literacy learning in a couple of districts, few district staff reported that PCS had any effect on other policies or priorities in the district. The exceptions to this were cases in which limited resources required a redirection of funds away from educational assistants to provide the supports required for implementing PCS, and in a single district where administrators recognized the opportunity provided by PCS for implementing innovative programming. In the main, however, district staff seemed surprised when asked what effect PCS might have on district initiatives: rather than understanding its potential for program innovation, staff viewed PCS as a stand-alone policy, requiring a managerial approach for implementation.

The degree to which school districts demonstrated the capacity to plan for change, to support changes as they happen, and to allow changes to work with other existing policies varied. Not only to reach compliance but also to make it more likely that positive synergies could be found among PCS and other district priorities. In their visits to the administrative offices, researchers observed a wide variation in the resources that the districts could access to respond to any new policy. For example, PCS created a demand for new teachers, which in turn created a district-level demand for mentoring and professional development to support new teachers – demands that stretched the resources of many school districts in an unexpected way. Some small districts had difficulty recruiting qualified staff.

The ability of a school district to develop leadership capacity is a significant indicator of overall district capacity. This may be a function of scale (large school districts with many leaders may be able to afford to make a more substantial investment in developing leaders) or density (leaders who see each other regularly to discuss challenges and solutions may develop a stronger sense of collective capacity). In general, researchers saw a primarily managerial approach to leadership in implementing PCS. It was both surprising and disappointing that this approach demonstrated little capacity to link PCS with other factors that might affect student learning.

SCHOOL-LEVEL LEADERSHIP

At the school level, principals' descriptions of PCS implementation reflected a classic middle-management role that, like district level administrators, emphasized compliance rather than innovation. The administrative task of placing students into groups of 20 trumped other considerations for the instructional needs of students – needs that, in the past, could have been addressed with some discretion at the site level.

While principals ostensibly made decisions about placing students in particular classes, the firmness of the mandate to group no more than 20 students to a class – combined, in some cases, with district requirements to establish combined grade classes – sharply reduced principals' ability to make student groupings, and student-teacher combinations, a priority. Teachers' expressed preferences for working in single-grade classes and in primary grades further reduced principals' ability to consider long-term staffing plans. Principals spoke of staffing most often in terms of these tradeoffs, in terms of hard years versus easier years for teachers – rather than, for example, considering teachers' skills in relation to particular grades or student needs (though the researchers heard a few examples of this), or in terms of fostering teachers' development of new skills by assigning them to particular kinds of classes. In other words, principals' tendencies were geared more toward short-term conflict management and less toward longer-term concerns about teaching quality.

PCS exists within a provincial policy context that has also simultaneously emphasized numeracy and literacy for early grades. Like school district administrators, principals' descriptions of PCS in relation to these other initiatives could be characterized as “parallel play.” In other words, the numeracy and literacy emphasis flows through one pipeline of incentives and directions, whereas PCS flows through another. Principals did not articulate any consistent ways that these policies were in contradiction, but neither were they likely to see them as integrated.

POLICY IMPLEMENTATION AND POLICY COHERENCE



In order to ensure that class size reduction results in positive outcomes for primary students rather than unanticipated difficulties, decision makers must take into account the less direct effects that are a result of the settings in which the reductions are implemented and the changing conditions within those settings. The Ontario PCS study emphasizes the importance of paying attention to the very factors that are under-specified in the literature on class size reduction: how differences among students, teachers, schools, and school systems might matter; the ways in which resources and other forms of capacity influence the quality and the magnitude of impact of policy initiatives; and the relative coherence of policy influences within which educational practice occurs.

RECOGNIZING CONTEXT DIFFERENCES

Students do not all come to school with the same skills and supports. Some students lack proficiency in the language of instruction. Culture, ethnicity, and personal family circumstances all influence the ease of “fit” with the regular school curriculum. A class size reduction initiative must support educators’ ability to provide more effective learning opportunities for diverse groups of students – in particular, to help teachers better assess and respond effectively to a wider range of student needs rather than ignoring such differences or, worse, redirecting scarce resources away from efforts to address them.

Teachers’ skills and experiences influence their ability to capitalize on the opportunities for teaching in small classes. Given that teacher effectiveness is a critical factor in student learning, simply slotting a teacher into a vacant classroom may not be very effective. District and school-level practices of assigning teachers to schools and classes influence whether teachers are able to develop relationships and deep knowledge of particular communities and kinds of student learning needs, or whether they continually revolve in and out of assignments and lose out on these informal professional learning opportunities.

The *supporting conditions for teaching*, including instructional resources, classroom space, adequate time for planning and assessment, and opportunities to work collaboratively with other educators, also accounts for significant differences in teaching quality. The literature suggests that teachers’ professional learning and working conditions must be taken into account during class size reduction implementation. How and to what extent might class size reduction affect teacher quality? Given that teachers do different work under different conditions, even in the same school, reducing primary class size could affect teacher quality differently across primary, junior, and intermediate grades and with different student populations.

The size and program complexity of *individual schools*, the socio-economic characteristics of the surrounding community, teacher strengths, and leadership all shape the quality and nature of the educational program. A new initiative like primary class size reduction might work differently in different school contexts.

Finally, *school districts* vary, in terms of geographic distance and density, number of schools and enrolments, local circumstances such as labour markets and demographics, and priorities. These characteristics could influence the implementation of class size reduction strategies.

RESOURCE CAPACITY

Understanding issues of capacity is crucial to understanding the impact of an initiative like class size reduction on classrooms, schools, and school systems. As used here, capacity includes human resources such as knowledge, skills, and specialized expertise; opportunities for educators to learn and time to develop competence; the availability of fiscal resources to ensure sufficient and high-quality instructional resources and space; the appropriate authority and flexibility required to utilize them appropriately; and the system “smarts” to attend to how all these factors interact. The “same” initiative can be highly positive, have serious unintended consequences, or make very little difference across settings, depending on local capacity.

Schools and school districts may operate with different levels of resource capacity, despite government funding practices that ensure uniform resources per pupil. Community socio-economic status may shape parents’ ability and involvement in additional fundraising in a given school. School district characteristics such as number of students enrolled, number of schools, and geographic concentration affect both opportunities and constraints for resource allocation. The diversity and urgency of students’ learning needs and the range of discrete educational programs operating within a system or school are also important factors that influence resource capacity.

Without a full picture of the resources required to implement class size reduction, schools and school systems may find that this innovation’s demands for resources has unintended and negative consequences for other educational programs from which resources may inadvertently be drawn. This tends to occur where resources are scarce and/or where an innovation has been introduced that, like primary class size reduction, targets part but not all of a school’s students and teachers. The redirection of scarce funds and human resources, and the greater attention paid by administrators to the program, may actually result in a worsening of conditions for teaching and learning elsewhere in those schools.

POLICY COHERENCE

Policy coherence is the ability to recognize the interactive and interconnected nature of many aspects of educational practice, across settings and levels. Policy coherence depends on the understanding by those who make and implement policy that policy initiatives do not occur on the ground as discrete events, but interact with other initiatives in operation at the same time *as well as* with policy effects from the past. It also depends on recognition that initiatives work their ways into and through many different system levels and settings, and that they work best when policy makers are willing to relinquish control by encouraging the development of local capacity to make and carry out informed decisions that make sense in their own settings.

Policy coherence is sometimes understood as synonymous with the concept of “alignment,” but it is more. Alignment typically emphasizes compliance with overarching system goals across hierarchical levels. For example, it typically emphasizes that teachers, principals, and school districts are all working toward the same purposes – rather than undermining or cancelling each other out – and are ensuring efficient resource management. Policy coherence may encompass the concept of alignment, but coherence moves the emphasis

away from issues of governance and accountability toward deeper understandings of the dynamic relationships among teaching, learning, and other organizational processes. Expecting simple policy changes to have dramatic and intended effects on educational practice is antithetical to policy coherence in that it fails to account for the actual interactions that comprise educational practice.

Policy coherence also has a substantive aspect: it balances the need for a variety of program initiatives to respond to different demands and circumstances while at the same time providing meaningful clarity of overall purpose. Policy coherence is, in a sense, leadership capacity at the system level to diagnose, prescribe, and implement effective solutions to educational problems on an ongoing basis.

CONCLUSION



Educators and policy makers can take away from this report an understanding that primary class size reduction is an initiative worth undertaking, but that it must be undertaken thoughtfully and carefully. It is not a “magic bullet.”

Ontario's primary class size reduction initiative has fulfilled much of its promise. Like similar initiatives undertaken in other provinces and elsewhere, Ontario's PCS strategy confirms that class size reduction can provide the environment in which teachers can interact with individual students more frequently and use a greater variety of instructional strategies, create more opportunities for higher-order co-construction of meaning by students, and interact more frequently with other teachers and adults in support of classroom teaching. The evidence suggests that students learn more, are more engaged, and are less disruptive. Parents of children in smaller classes perceive improvements in their children's school experiences.

But the research on PCS in Ontario also suggests that how class size reduction is implemented matters greatly, in terms factors that support innovative practice. Effective implementation requires policies and procedures that take into account differences in student skills and supports and provide effective learning opportunities for diverse groups of students. Reducing class size is costly, and failing to account for these costs can compromise the experience for involved students and teachers, and may even cause problems in other areas. Quality classroom space, opportunities for teachers to work and plan together easily; opportunities for teachers to learn new instructional strategies; and instructional resources (both materials and human expertise) are all crucial. Schools and districts must possess the ability to take advantage of the opportunities of an initiative like class size reduction in ways that support rather than compromise other educational priorities. The effective implementation of primary class size reduction requires understanding that policy initiatives do not occur on the ground as discrete events, but interact with other initiatives in operation at the same time, as well as with the effects of past policies.



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