

## RESEARCH REPORT

August 2000

## CLASS SIZE MAKES A DIFFERENCE

*There is no longer any argument about whether reducing class size in the primary grades increases student achievement. The research evidence is quite clear: it does.*

Alex Molnar, 1999

The benefits of small class sizes, particularly in the primary grades, are becoming clearer with each new study. The research indicates that the greatest benefits are in classes with less than 20 students.

The most thorough research has been the **Tennessee Student/Teacher Achievement Ratio (STAR)** project. From 1985 to 1989, upon entering school, students in 79 elementary schools in Tennessee were randomly placed in small classes of 13 to 17 students, regular classes of 22-26 students, or regular classes with a teacher aide from kindergarten through grade 3. Students stayed in their class assignment until grade 4, when all were in regular classes. These students have been followed for 14 years. The latest results point to a lifetime of benefits from small classes.<sup>1</sup>

Students in small classes performed significantly better than their peers on

reading and mathematics tests. Students in small classes participated more in school and had fewer discipline problems. Minority students and inner-city students showed an even greater improvement when in small classes.

Furthermore, the benefits of small classes were cumulative; the more time the student spent in a small class, the greater the improvement. To reap the long-term benefits, students must spend at least two years in a small class. Students who spent four years in a small class received the greatest benefit.

These benefits were maintained when students were returned to regular class sizes in grade 4. The latest results show that the benefits of small class sizes in kindergarten to grade 3 last through high school. Students in small classes in the early years were less likely to drop out, more likely to graduate on time, more likely to take more challenging courses in high school, and more inclined toward college than their peers from larger classes (Pate-Bain, et al, 1999).

<sup>1</sup> A number of articles describe the STAR program. See for example Achilles (1999), Finn (1998), Molnar (1999) and Viadero (1999).

The benefits of being in a small class in the primary grades increased over time. In grade 4, students who attended small classes in kindergarten to grade 3 were 6-9 months ahead of students from regular classes. By grade eight, they were over one year ahead (Molnar, 1999).

Smaller classes do cost more money. But, fewer students repeating grades make up for that cost. More high school graduates with increased earning power adds more money to the economy and reduces the cost of social welfare benefits (Pate-Bain, et al, 1999).

The lead researcher on the Tennessee project, Dr. Helen Pate-Bain, states, "*I don't care how effective your teacher is. If you give her too many kids, she can't be effective.*" (National Education Association, 1999)

The benefits of small classes have been found in other jurisdictions. A comparison of small class sizes in public schools and vouchers for private schools, two alternatives investigated in **Wisconsin**, unequivocally comes out in favour of small classes. The three-year-old **Student Achievement Guarantee in Education (SAGE)** program which reduces class sizes to 15 in kindergarten to grade 3 in low-income neighbourhoods is producing significant improvements, particularly for African-American students (*Rethinking Schools*, 2000).

In addition to the improvements that show up on achievement tests, teachers report that "*They get to know their students better, spend less time on discipline, and are able to provide students with more*

*individualized instruction. Generally, smaller classes go hand-in-hand with greater enthusiasm and achievement among both students and teachers.*" (Dupuis, 2000) While some have disputed the increase in individualized instruction possible in small classes,<sup>2</sup> individualization includes more than one-on-one instruction. A focus on the needs of individual students occurs when teachers form small groups and during whole-class instruction. The smaller classes allow teachers to better know and understand the needs of the individual students, allowing intervention earlier when problems arise (Zahorik, 1999).

In the SAGE program, four classroom arrangements were examined: a class of 15 students with one teacher; one teacher and 15 students sharing a room with another teacher and 15 students; two teachers team teaching 30 students; and one teacher with 30 students except during reading, language arts, and mathematics when another teacher joins the class. All of these options outperformed students from other schools, but no difference was found in the performance of students in the different SAGE models (Zahorik, 1999). "*If this finding continues to be robust, it obviously has important implications about the cost of reducing class size.*" (Molnar, 2000) It should be noted that the Tennessee STAR project found no statistical difference between regular classes of 22-26 students and regular classes with a teacher and a teacher aide.

<sup>2</sup> Cizek (1999) only focuses on the amount of time a teacher can spend alone with each child and only accounts for a 50 minute class.

*If I'm a school administrator, I don't know how to get teacher quality. I do know for sure how to get a small class. While we stand around messing with teacher quality, we're going to lose a generation of kids.* (Charles M. Achilles, quoted in Viadero, 1999)

In 1996, California initiated a Class Size Reduction (CSR) program (CSR Research Consortium, 1999). Funds were provided by the state legislature to reduce primary class sizes from an average of over 30 to 20 or fewer students. It is a voluntary program; school districts that provide small classes are given extra money – \$650 per pupil in 1996-97 and \$800 per pupil in 1997-98. Money for new facilities is also available. State-wide, almost 90 percent of grade 1 students were in small classes in the first year (1996-97). In the second year, almost all grade 1 and grade 2 students were in classes with 20 or fewer students. When tested, students in grade 3 in small classes showed a small positive achievement gain.

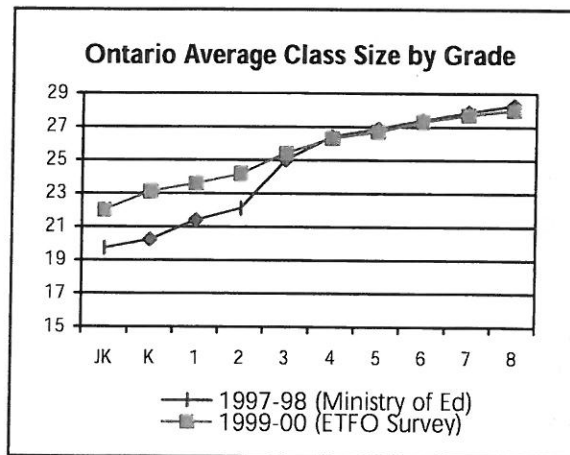
Molnar (1999) has summarized why small classes are so effective:

- *Children receive more individualized instruction, one-on-one help, small group help, class participation.*
- *Children misbehave less because of the family atmosphere and quick intervention by teachers.*
- *Teachers spend more time on direct instruction and less on classroom management.*
- *Classes include more "hands-on" activities although most instruction remains teacher – not student – centered.*

- *Students become more actively engaged in learning than peers in large classes.*
- *Teachers of small classes "burn out" less often.*

In Canada, British Columbia and Quebec have negotiated collective agreements that guarantee smaller class sizes in the early years. In British Columbia, no kindergarten class will be over 20 and no grades 1-3 class will be over 22 by 2000-01. In Quebec, primary class sizes will be reduced over the next four years to an average of 18 in kindergarten, 20 in grade 1 and 22 in grade 2. Alberta has initiated a pilot project to reduce class size.

In Ontario, the government mandated that starting in 1998 class sizes on a board-wide level should not exceed an average of 25 for elementary, 22 for secondary. This has resulted in dramatic increases in average class sizes in the primary grades in public elementary schools. Over the past two years, average class sizes for kindergarten to grade 2 have increased 9 to 14 percent. An ETFO study (2000) found that there are classes that are well over 30 at the elementary level.



In the provincial budget for 2000-01, a reduction was made to the mandated board-wide average class size. Starting in 2000-01, the board-wide average class size for primary grades is not to exceed 24; for all elementary combined, the board-wide average is not to exceed 24.5. For secondary, the new board-wide average class size is to be 21. This is counter to the research and the direction of other jurisdictions. Small classes, to have a beneficial effect for student achievement and behaviour, should begin in the primary grades and should be lower than 20. *"The S [small class] treatments is more preventative than remedial. If a student does not experience small classes when first entering the "system," there may be little gain without tutorials (the ultimate class size) or other expensive "treatments." This finding indicates that class-size initiatives should begin in the lowest grades and move ahead one grade at a time."* (Achilles, 1999)

The student focused funding formula brought in by the government in 1997 requires school boards to operate schools at or near full capacity. A number of boards will have to close schools over the next few years, in order to access funds to build schools in growth areas and to manage the restricted funds for programs and services. This will result in little flexibility to implement an effective class size reduction program – one of the problems experienced in California. Many districts in California have cut funds and space for other programs in order to access the funds for class size reduction. The ETFO school-based survey (2000) indicates that school space is already being diverted from other areas, such as library

and special education, to provide classroom space.

In some jurisdictions, small classes have been provided only to students with high needs. The research shows that minority and poor students make the most significant gains in small classes. However, Ontario should be following BC and Quebec's lead – a model whereby all benefit. *"Targeting small classes in particular schools or districts may provide the greatest benefits at a cost that is contained, although it may also mean denying the benefits to other students or schools."* (Finn, 1998)

A challenge faced by California was in hiring qualified teachers. More qualified and experienced teachers were hired in schools servicing higher income levels. The children in schools in lower income level areas, who, according to the research in Tennessee would most benefit from small classes, were less likely to be in smaller classes and more likely to have unqualified teachers.

Some districts in California found they had a funding surplus from the class size reduction support. Primarily, these districts were small, both urban and rural, and with fewer ESL students.

These challenges faced in California were because they implemented a good policy decision too quickly. This did not leave time to plan the implementation.

There can be no doubt that small class sizes in the primary grades produce a higher quality education system. All of the evidence points to the need for Ontario to

significantly lower class sizes in elementary schools, particularly in kindergarten to grade 3. The evidence also suggests that this must be done in a thoughtful way to avoid the challenges faced in California. School boards should not be allowed to divert funds and space for other programs in order to provide small classes for some students.

A phased in plan would be the best approach. Such a plan should begin with grade 1 in the first year, ensuring that no grade 1 class has over 20 students. The second year should expand to grade 2, incorporating clear maximum class sizes

for all grades, rather than averages. Given the wealth of data and analysis coming from the Tennessee STAR project, Ontario should include a research and evaluation process in its class size reduction program.

Small classes in the primary grades make sense for students, for teachers, for our education system and for our society. It is a proven education reform.

Can Ontario's students afford to be left behind?

Pat McAdie

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# N.S. classes are too big, too small

RANCES WILLICK AND DAVID JACKSON STAFF REPORTERS

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Seven schools have under 30 students, fewer than many classrooms



Big Tancook Elementary has the distinction of being the province's smallest school with just five students.

Parents and teachers fume and brood about large classes sizes, some schools in Nova Scotia are facing the opposite situation.

The entire student population of many schools doesn't even come close to the province's class-size cap of 29.

At Big Tancook Elementary School on Big Tancook Island off the South Shore, for instance, the total student population is five. Pleasant Bay School in Cape Breton boasts an enrolment of six, and Eastern Consolidated Elementary School in Moser River on the Eastern Shore has seven students this year.

Enrolment numbers from September 2011 revealed that 20 schools in the province had fewer than 45 students, and 12 of those had a student population of less than 29.

Meanwhile, other schools are bursting at the seams. One year ago, 10 schools had more than 1,000 students, with the Cobequid Educational Centre in Truro topping the list at 1,590 students.

"We have challenges on both ends of the spectrum," Education Minister Ramona Jennex told reporters Thursday.

"We have class sizes that are exceeding our cap, which is not going to continue. We're going to make sure that that's remedied, and we also have to look at what we can do to make sure that our students that are in schools that have fewer students also get service that they deserve from their teachers."

With 15 pupils last year, Eastern Consolidated Elementary School had more than enough students to be able to award a student of the month without recycling names. But this year, the tiny school doesn't even have enough pupils to make up a soccer team.

"I think a family or two moved away over the summer," said Doug Hadley, a Halifax regional school board spokesman.

"We were identifying enrolment as being 18, but when we actually opened the doors, there were only seven."

The seven students and two teachers use just two of the 12,000-square-foot building's 10 rooms as classrooms, and use other rooms as a computer lab and library. Hadley said.

School boards and the province are taking some steps to bring the disparity in class sizes under control.

Eastern Consolidated Elementary School, along with Lakefront Consolidated Elementary School, which had 31 students last year, and Sheet Harbour Consolidated School, which had 128 students last year, are up for review and possible closure.

The three schools cost about \$250,000 a year to operate and maintain, not including salaries.

Meanwhile, bulging schools with classes of up to 33 students may see some relief from the province.

Jennex said the province would provide funding for more teachers if boards need it.

"If I see a challenge in an area that we need more teachers, I will most definitely make sure that we have the appropriate number of teachers to make sure our children have the education that they need."

The Chignecto-Central regional school board is looking within its budget for a fix for a school in Amherst, where there are two Grade 1 classes with 30 or more students.

"This is a situation that we'll handle within our current envelope," board spokeswoman Debbie Buott-Matheson said earlier this week.

"Unfortunately, the budget is what it is at this point, and we are going to operate within it to the best of our ability."

Students are still getting settled, and the board won't really know enrolment numbers and class sizes until the end of the month, she said.

Buott-Matheson said the board, which clashed with the province earlier this year over a funding cut, is concerned about whether the cut will lead to bigger class sizes, but it is a bit early to say if that is the case.

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## **SMALLEST SCHOOLS**

Nova Scotia's smallest schools, by number of students registered in 2012:

1. Big Tancook Elementary: 5
2. Pleasant Bay School: 6
3. Eastern Consolidated Elementary, Moser River: 7
4. Middle River Consolidated: 22
5. Maitland District Elementary: 24
6. Wentworth Consolidated Elementary: 26
7. Greenfield Elementary: 26
8. Lakefront Consolidated Elementary, Tangier: 31
9. Digby Neck Consolidated Elementary: 37
10. Ecole des Beaux-Marais, Porters Lake: 39



## Comments(17)

.s what it is | September 14, 2012 - 5:43am

remember the 1960's

When I started school in 1961 the grade primary class had almost 50 students in it. It was taught by a little white hair lady her name was Mrs. Cossett she taught at South Woodside School. She had no teacher aids or assistants. No volunteer mothers to help us to dress in our outside clothes or change into our gym clothes. She taught us to write our names our proper names and to read print add and subtract and sent homework home and our parents or an older sibling helped us with it taught us to tie our shoes button our coats and put our boots on. WE learned quickly so we wouldn't be cold because there were no cars to drive us back and forth to school we walked. We all grew up got jobs and had families of our own and now are reaching retirement age. I don't recall any of us growing up to be murders or living off of the government. We even got to learn a song or two and sometimes we coloured pictures. Parents need to take more involvement in the basics the school system didn't have these children YOU did!!

by law | September 14, 2012 - 9:23am

Bang on

Do I ever remember those days, you hit the nail on the head. Sadly today Kids (Children) are so bubble wrapped, it is wonder why most of em are even able to walk.

by build | September 14, 2012 - 10:03am

50 would be too large

There's a huge difference between your class size of 50 in the Sixties and today. It's called inclusion. The Liberals brought that in during the savage Savage years, much to the protest of parents, teachers and school boards.

Now teachers have to spend their days trying to keep a classroom under control instead of teaching. 27 or 28 kids in a class (if one or two has very special needs) is manageable, but 50 would not be. Not with teachers living with the disastrous policies of the last Liberal government.

by smullan | September 14, 2012 - 6:21am

Classes too small

I was listening to someone say the other day that in many cases grade primary is just high priced daycare.

After thinking about it, where a school in my area has a primary class of 26, I determined that nothing could be further than the truth.

The provincial rules for daycare operations would never let you get away with 1 adult supervising twenty-six 4 and 5 year old children for the day. I think at the daycare at some point you get to tell the parents your full.

N.S. classes are too big, too small | The Chronicle Herald

the children the true effects won't be known for years. Good thing Deputy Minister and former HRSB Superintendent Carole Olsen has all the principals and administrators in HRM wearing muzzles so they won't alert the parents to the true state of things.

Why would they. The way to get ahead in at the Halifax Regional School Board was to kiss up to senior staff. Maybe they're all looking for Department of Education jobs to double dip after their upcoming retirements and the last thing the current HRSB administrators would want to do is tick off Ms. Olsen and risk their post retirement incomes at the DOE.

by YourMama | September 14, 2012 - 10:10am

Couldn't agree with you more,

Couldn't agree with you more, especially the last 2 paragraphs. Well said.

by Fiscal\_Conservative | September 14, 2012 - 6:26am

School Board class sizes

"Meanwhile, bulging schools with classes of up to 33 students may see some relief from the province."

YES! This is what I wanted to hear from the NDP!

While I understand that class sizes, on average, are smaller, you do still have a few areas of growth.

The school board has allowed a few classes to go over the cap. No class should have 30 kids in it. Good to know the NDP will step in.

by build | September 14, 2012 - 9:56am

NDP will step in because school board won't

The school budgets need to go to kids, teachers and the classrooms. There's plenty of waste at the administration level and the school board level.

by bro tim | September 14, 2012 - 6:44am

Why Aren't These Small

schools being sold and the students sent to larger schools, Talk about wasting money.

by Kate Oland | September 14, 2012 - 7:12am

Small isn't necessarily the problem

Much gets lost in the discussion about small rural schools.

1. Many of the listed schools are in isolated and remote communities.
2. Closing these schools will result in unacceptably long bus rides for the children who attend them.

4. The closure of rural schools virtually eliminates the potential for new families to move into the community, so the economic spin-off of closure far exceeds the cost of running the facilities.

5. The Department of Education provides "Isolated and Small School Grants" to school boards to defray the cost of operating these schools (ostensibly because it understands that children in these communities have a right to education close to home). Unfortunately, even when the grant virtually covers the entire cost to the school board, school boards continue to review and close these schools.

If they're not costing the Boards anything to run, and the quality of education is acceptable... why are these schools targeted? My sense is that it's an easy way for boards to look as though they are "getting rid of excess capacity". It also makes things easier for Operations Departments, who likely don't enjoy having to send maintenance and repair people long distances to service the schools.

Middle River Consolidated, for example, costs approximately \$41,000 per year to operate (not including salaries) - less than it costs the Board to employ a secretary. The provincial Isolated and Small Schools grant pretty much covers the total cost of running the school. Closing the school would put some children on the bus for close to two hours per day. Their access to after school opportunities would likely diminish, as they have to catch a bus home. Arguably, the quality of education would be severely eroded. And the likelihood of Middle River attracting young, new families would plummet.

Are rural children's rights unimportant? Are there no creative solutions to be had? What about connected and online teaching? What about negotiating with Unions to come up with less costly ways of servicing isolated schools? (i.e. a leaky faucet at our school could easily be fixed by community members, but we must pay a union member to drive from Sydney to do the job). What about making these schools multi-service hubs where adults can pursue continuing education, and other community groups can share space and costs?

The bottom line is this: Either Nova Scotia believes in and supports its rural communities, or it doesn't. If the Province does not intend to help these vibrant, warm, and enriching school communities thrive, then I suggest it legislate tax breaks for home schooling families, or consider a charter school option. Rural children and communities deserve better than being sold out for what amounts to pennies out of a massive budget.

For more information, and to learn about the "Schools at the Center" Initiative, please visit the Nova Scotia Small Schools Initiative on Facebook. Add your voice!

by chief wiggam | September 14, 2012 - 7:41am

chief wiggam

well some kids are getting some good attention.

by Billy Bob | September 14, 2012 - 8:11am

problems to be had? Let's find one

All of this back and forth about class sizes? So tell me now what happens when you exceed the magic number, does the voice and influence of the teachers attenuate to the point that no one learns anything? Or is the the case that some union air head in a moment of invectiveness pulled a number out of the air and  
<http://thechronicleherald.ca/novascotia/135754-n.s.-classes-are-too-big-too-small>

knowledge from one person to another, I am of the opinion that the classroom number is nothing but a pressure point used by the teachers union. Drop into any lecture hall at any college or university, I am sure that you will see 25-35-45 or more students in the process of learning, so where does the difference lie, maybe the collective agreement is the true source of all this foolishness.

by more equal than you | September 14, 2012 - 8:56am

Just curious....what do these

Just curious....what do these schools with 5-6-7-23-27,etc students have for staff....teacher...principal.....janitor....receptionist....?

by more equal than you | September 14, 2012 - 9:43am

Another comment

It's neither the number nor quality of teachers.....it's the quality of the students and parents that matter.You can give every student their own personal teacher,but if they don't show up for class,don't do their homework and assignments and are GUARANTEED not to be held back,why would they even bother to learn to read.  
Hey,maybe they all want to be like our integritous(?)university presidents.....just quit your job and get paid boatloads of money.How's that go?....lead by example?

by anHRMreader | September 14, 2012 - 9:48am

"Drop into any lecture hall

"Drop into any lecture hall at any college or university, I am sure that you will see 25-35-45 or more students in the process of learning, so where does the difference lie, maybe the collective agreement is the true source of all this foolishness."

Are you seriously comparing a university lecture hall to a group of 5 year olds? Or even a group of 10 year olds? Or even 16 year olds? And arguing that the reason 45 5 years olds can't learn is because of unions? Wow.

The difference lies in so many things... cognitive abilities, to start. Maturity, engagement... not to mention an active choice to learn and ability to master the material.

I am sick and tired of hearing the "I went to school when...." argument. Students are not the same in 2012 as they were in 1962, 1972 or even 1992.

by Coyotell | September 14, 2012 - 10:10am

"I am sick and tired of

"I am sick and tired of hearing the "I went to school when...." argument. Students are not the same in 2012 as they were in 1962, 1972 or even 1992."

If you are so sick od hearing that, then why don't you explain how the students are different? Are you saying that the human race de-evolved and are now dumber?

by law | September 14, 2012 - 10:21am

So you are sick and tired of hearing "I went to school when...." argument. Students are not the same in 2012 as they were in 1962, 1972 or even 1992." You are absolutely correct, they are not. Today's children have no discipline provide at home, time outs are considered discipline in today's world. Therefore the Teachers are expected to entertain your little Billy and Suzy, because you the Parent have no ability to do this. When little Billy and Suzy comes home from school, you either have them cared for by a Sitter or Day care, who provides safety, but no guidance. When little Billy or Suzy finally comes home after you and the other Parent get home from work, you sit Billy or Suzy in front of some form of computer or entertainment center, this because you are too tired to actually provide parenting skills and guidance to Billy or Suzy. Then when everything else is done you bubble wrapped Billy and Suzy from the realities of life. Then when Billy and Suzy become teens or early adults and they hit the streets you sit back and wonder why they are in trouble with the law or having significant social skill with issues.

Yup you are correct they sure are not the same!!!!

by JayRob | September 14, 2012 - 9:59am

Here are the facts.

Statistics Canada  
Average Class size (P-3) by province





BC 20.6  
AB 17  
SK 17.9  
P 20  
C 23

Atlantic Canada

PE 18.1  
NB 18  
NL 16.6  
NS 25.7

You can make your own judgements.  
Firstly, 29 students as a cap is pathetic...secondly, wake up and smell the coffee NDP and Department of Education...the children of Nova Scotia deserve better. Show some leadership and reduce class sizes.

The Chronicle Herald

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