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Report Card on Alberta's Elementary Schools

2002 Edition

Peter Cowley and Stephen Easton

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Introduction

The Report Card on Alberta's Elementary Schools: 2002 Edition (hereafter, *Report Card*) collects a variety of relevant, objective indicators of school performance into one, easily accessible public document so that anyone can analyze and compare the performance of individual schools. By doing so, the *Report Card* assists parents when they choose a school for their children and encourages and assists all those seeking to improve their schools.

The Fraser Institute's report cards on secondary schools are now well established in Canada. With this publication, report cards on elementary schools become part of the Canadian education landscape. In the United States, the departments of education in 49 states publish annual report cards on schools—for all school levels—many of which are not dissimilar to the Institute's series. In the United Kingdom, the national Department for Education and Skills publishes a wide variety of data on school performance.

Report cards on schools are becoming commonplace. But, are they effective? Certainly, anecdotal evidence provided to the authors by parents and school administrators confirm their usefulness. Further, research suggests that real gains in school performance can result from their introduction. In an article published last year,¹ Caroline Hoxby, a Harvard professor of Economics well known for her work related to education, showed that students in American states that published report cards experienced faster improvement in their scores on the National Assessment of Educational Progress (NAEP) than did students in states that did not publish report cards. Hoxby concludes, "Statewide standardized tests and school report cards may be unpleasant for ineffectual educators, but they should not be controversial with parents or policy makers who want to see higher achieve-

ment. Schools conduct themselves better when their constituents are informed."

The Report Card can help parents choose

Where parents can choose among several schools for their children, the *Report Card* provides a valuable tool for making a decision. Because it makes comparisons easy, the *Report Card* alerts parents to those nearby schools that appear to have more effective academic programs. Parents can also determine whether or not schools of interest are improving over time. By first studying the *Report Card*, parents will be better prepared to ask relevant questions when they interview the principal and teachers at the schools under consideration.

Of course, the choice of a school should not be made solely on the basis of any one source of information. Families choosing a school for their students should seek to confirm the *Report Card's* findings by visiting the school and interviewing teachers and school administrators. In addition, a sound academic program should be complemented by effective programs in areas of school activity not measured by the *Report Card*. Nevertheless, the *Report Card* provides a detailed picture of each school that is not easily available elsewhere.

The Report Card facilitates school improvement

Certainly, the act of publicly rating and ranking schools attracts attention. This attention can provide both a carrot and a stick. The results of poorly

performing schools generate concern as do those whose performance is deteriorating. Schools that perform well or show consistent improvement are applauded. This inevitable attention provides an incentive for all those connected with a school to focus on student results.

However, the *Report Card* offers more than just incentive. It includes a variety of indicators, each of which reports results for an aspect of school performance that might be improved. School administrators who are dedicated to improvement eagerly accept the *Report Card* as another source of opportunities for improvement.

Some schools do better than others

To improve a school, one must believe that improvement is achievable. This *Report Card*, like the Fraser Institute's report cards on secondary schools, provides evidence about what can be accomplished. It demonstrates clearly that, even when we take into account factors such as the students' family background, which some believe dictate the degree of academic success that students will have in school, some schools do better than others. This finding confirms the results of research carried out in other countries.² Indeed, it will come as no great surprise to experienced parents and educators that the data consistently suggest that what goes on in the schools makes a difference to academic results and that some schools make more of a difference than others.

Comparisons are at the heart of the improvement process

Many elementary school authorities in Alberta provide students and their parents with report cards that include both the student's mark and the me-

dian mark for each subject in which the student is enrolled. The report cards also show any marks awarded to the student earlier in the year. Comparative and historical data like these enable students and parents to see a clearer picture of the student's progress. By comparing a school's results with those of neighbouring schools or of schools with similar school and student characteristics, we can identify more successful schools and learn from them. By comparing a school's latest results with those of earlier years, we can see if the school is improving. Reference to overall provincial results places an individual school's level of achievement in a broader context.

There is great benefit in identifying schools that are particularly effective. By studying the techniques used in schools where students are successful, less effective schools may find ways to improve. This advantage is not lost on the United Kingdom's Department of Education and Skills. Its Beacon Schools program³ identifies schools across the country that have demonstrated expertise in a wide variety of challenging aspects of the management of schools and the teaching and counselling of their students.

Comparisons are at the heart of improvement: making comparisons among schools is made simpler and more meaningful by the *Report Card's* indicators, ratings, and rankings.

You can contribute to the development of the *Report Card*

The *Report Card* program benefits from the input of interested parties. We welcome your suggestions, comments, and criticisms. Please contact us via e-mail to: reportcards@fraserinstitute.ca.



A measure of academic effectiveness for schools

The foundation of the *Report Card* is an overall rating of each school's academic performance. Building on data about student results provided by Alberta Learning (the provincial ministry of education) we rate each school on a scale from zero to 10. We base our overall rating of each school's academic performance on seven indicators:

- (1) average achievement-test marks (percent) in grade-3 language arts;
- (2) average achievement-test marks (percent) in grade-3 mathematics;
- (3) average achievement-test marks (percent) in grade-6 language arts;
- (4) average achievement-test marks (percent) in grade-6 mathematics;
- (5) the percentage of achievement tests in (1) to (4) where the results were below the acceptable standard;
- (6) the difference between male and female students in their average achievement-test mark in grade 6 language arts;
- (7) the difference between male and female students in their average achievement-test mark in grade 6 mathematics.

We have selected this set of indicators because they provide systematic insight into a school's performance: because they are based on annually generated data, we can assess not only each school's performance in a year but also its improvement or deterioration over time.

Indicators of effective teaching

Average achievement-test marks

These indicators (in the tables *Average exam mark*) report the average percentage achieved by a school's students on the uniform achievement tests in two core subject areas. For each school, each indicator is the average score (expressed as a percentage) achieved by all of the school's students who completed the tests in the language arts and mathematics achievement tests at the grade 3 and grade 6 levels.

Fundamental to the mission of elementary schools is teaching its students sound basic skills in reading, writing, and mathematics. Basic literacy and numeracy are essential building blocks for life-long learning. The tests upon which the *Report Card* is based assess students on these dimensions. Examinations are designed to achieve a distribution of results reflecting the differences in students' mastery of this course work. Differences among students in abilities, motivation, and work-habits will inevitably have some impact upon the final results. There are, however, recognizable differences from school to school within a district in the average results on the achievement tests. There is also variation within schools in the results obtained in different subject areas. Such differences in outcomes cannot be wholly explained by the individual and family characteristics of the school's students. It seems reasonable, therefore, to include the average test marks in these two critical subject areas as indicators of effective teaching.

Percentage of achievement tests failed

For each school, this indicator (in the tables *Percentage of exams failed*) provides the rate of failure (as a percentage) in the achievement tests. It was derived

by dividing, by the total number of such tests written by those students, the sum, for each school, of all the above achievement tests written by the school's students where either the score was below the acceptable standard or the test was only partially completed.

Since reading, writing, and mathematics are critical to students' further intellectual and personal development, students should, at the minimum, be able to demonstrate that they meet the acceptable standard of performance for their grade in these subject areas. Schools have the responsibility of ensuring that their students are adequately prepared to do so.

How well do the teachers take student differences into account?

The *Gender gap* indicators

Undoubtedly, the personal characteristics of students can influence the way that they learn. Successful teachers will take into account these characteristics as they develop and implement their lesson plans and teaching strategies. The extent to which a school's teachers succeed in this task can be measured by comparing the results of two different groups of students known to exhibit differences in their learning patterns and academic results.⁴

The relative academic success of boys and girls is a subject of considerable interest in the education establishment as evidenced by the near universal collection of student results data for these two groups of students by ministries of education. The *Report Card* uses these data to construct the *Gender gap* indicators.

The *Gender gap* indicators measure the difference, if any, between boys and girls in their average marks on achievement tests in grade-6 language arts and mathematics. The indicators report the size of the difference and the more successful sex.

In general, how is the school doing academically? The Overall rating out of 10

While each of the indicators is important, it is almost always the case that any school does better on some indicators than on others. So, just as a teacher must make a decision about a student's overall performance, we need an overall indicator of school performance (in the tables *Overall rating out of 10*). Just as teachers combine test scores, homework, and class participation to rate a student, we have combined all the indicators to produce an overall school rating. The overall rating of school performance answers the question, "In general, how is the school doing, academically?"

To derive this rating, the results for each of the indicators, for each of the five years were first standardized. Standardization is a statistical procedure whereby sets of raw data with different characteristics are converted into sets of values with "standard" statistical properties. Standardized values can readily be combined and compared.

The standardized data were then combined where required to produce seven standardized scores—one for each indicator—for each school, for each year. The seven standardized scores were weighted and combined to produce an overall standardized score. Finally, this score was converted into an overall rating out of 10. It is from this *Overall rating out of 10* that the school's provincial rank is determined.

For schools where only boys or girls were enrolled, there are, of course, no results for the *Gender gap* indicators. In these cases the *Overall rating* is derived using the remaining five indicators. (See Appendix 1 for an explanation of the calculation of the *Overall rating out of 10*.)



Other indicators of school performance

The *Report Card* includes other indicators that, while they are not used to derive the *Overall rating out of 10*, add more information on the school's effectiveness.

The *Value-added* indicators

Value-added measures are designed to show whether a school is making a difference by comparing the results of the same students over a number of years. These indicators (in the tables *3-year Value added*) report the difference between the standardized scores of the students on the grade-6 language arts and mathematics achievement tests in the reported year and their standardized scores on the corresponding grade-3 tests three years earlier. For roughly two-thirds of schools, the difference will lie somewhere between about -0.8 and $+0.8$ in language arts and between -0.9 and $+0.9$ for mathematics. Where a school's *3-year Value added* indicators lie outside these ranges, it suggests a substantial improvement or deterioration in the level of accomplishment of the grade-6 class.

Because we cannot be certain that every student at the school in grade 6 was also at the school in grade 3, we must consider that this measure is an estimate of the value added for all students. Further, for schools whose grade-3 classes scored very well or very poorly, it is likely that any change in their level of achievement will be towards the average rather than away from it. For instance, at a school where the average test mark for the grade-3 class was in the top 2% of all schools, it would be extremely unlikely that its grade-6 results three years later would be even better. Nevertheless, the *Value added* indicator can be useful in that it estimates change over time in school achievement of a particular cohort of students. Thus, it takes personal and

family characteristics into account and provides a reasonable measure of the effect of the school on the students' level of achievement between grades 3 and 6.

The *Trend* indicator

Is the school improving academically? The *Report Card* provides five years of data for most schools. Unlike a simple snapshot of one year's results, this historical record provides evidence of change (or lack thereof) over time.

To detect trends in the performance indicators, we developed the *Trend* indicator. This indicator uses statistical analysis to identify those dimensions of school performance in which there has likely been real change rather than a fluctuation in results caused by random occurrences. To calculate the trends, the standardized scores rather than raw data are used. Standardizing makes historical data more comparable and the trend measurement more reliable. Because calculation of trends is uncertain when only a small number of data points is available, a trend is indicated only in those circumstances for which all five years of data are available and for which it is statistically significant. For this indicator we have defined the term "statistically significant" to mean that, nine times out of 10, the trend that is noted is real, that is, it did not happen just by chance.

The socio-economic indicator

Educators can and should take into account the abilities, interests, and backgrounds of their students when they design lesson plans and teach the curriculum. By doing so, they can overcome disadvantages that their students may have. The socio-

economic indicator enables us to identify schools that are roughly similar to each other with respect to the home background of their students so that their results can be compared. Effective schools produce good results regardless of the family background of their students.

For this inaugural edition of the *Report Card*, we have adopted the Parents' average education (yrs) developed for the *Report Card on Alberta's High Schools*⁵ as the socio-economic indicator. When data from the 2001 census are available, we will calculate a socio-economic indicator specifically designed for the province's elementary schools.

Previous studies⁶ have shown that variations in student results between schools cannot be account-

ed for solely by the personal and family characteristics of its students. Many other factors—including good teaching, counselling, and school administration—contribute to the effectiveness of schools. Indicators like Parents' average education (yrs) describe past relationships between a socio-economic characteristic and a measure of school effectiveness. It should not be inferred that these relationships will or should remain static. The more effectively schools enable all their students to succeed, the weaker will be the relationship between the home characteristics of students and their academic success. Thus, this socio-economic indicator should not be used as an excuse for poor school performance.



Notes

- 1 Caroline Hoxby, *Testing Is about Openness and Openness Works* (Hoover Institution, July 30, 2001). Digital document: http://www-hoover.stanford.edu/pubaffairs/we/current/hoxby_0701.html (as of June 3, 2002).
- 2 See, for instance, Michael Rutter et al., *Fifteen Thousand Hours: Secondary Schools and Their Effects on Children* (Cambridge, MA: Harvard University Press, 1979); Peter Mortimore et al., *School Matters: The Junior Years* (Wells, Somerset: Open Books, 1988); and Laura Lein et al., *Successful Texas Schoolwide Programs: Research Study Results* (STAR Center at the Charles A. Dana Center, University of Texas at Austin). Digital document: <http://www.starcenter.org/products/pdf/successfulreport.pdf> (as of June 3, 2002).
- 3 See the Beacon Schools program site at <http://www.standards.dfee.gov.uk/beaconschools/>.
- 4 See for example, Peter Cowley and Stephen Easton, *Boys, Girls, and Grades: Academic Gender Balance in British Columbia's Secondary Schools*, Public Policy Sources 22 (Vancouver, BC: The Fraser Institute, 1999).
- 5 Peter Cowley with Shahrokh Shahabi-Azad, *Report Card on Alberta's High Schools: 2001 Edition*, Studies in Education Policy (Vancouver, BC: The Fraser Institute, 2001).
- 6 Cowley, *Report Card on Alberta's High Schools: 2001 Edition*: page 14.