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# Report Card on Alberta's High Schools

## 2001 Edition

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# Introduction

Parents want better schools. Students want better schools. Teachers, counsellors, principals, superintendents, members of local school boards, and officials from Alberta Learning want better schools. Taxpayers and employers want better schools. While there is agreement about the need for better schools, there is no agreement about how to improve our schools. One thing, however, is certain. Any effective plan to make our schools better will require that we regularly determine whether or not the school is meeting its objectives. We must measure each school's performance.

The *Report Card on Alberta's High Schools: 2001 Edition* (hereafter, *Report Card*) collects a variety of relevant, objective indicators of school performance into one easily accessible public document so that all interested parties can analyze and compare the performance of individual schools. In this way, the *Report Card* encourages and assists those seeking to improve their schools.

## **The Report Card facilitates school improvement**

How will the *Report Card* lead to better schools? Simply measuring results is certainly no guarantee of improvement. Regular measurement of performance is, however, a necessary component of any plan for improvement. Fifty years ago, Dr. Joseph Juran<sup>1</sup> and others pointed out the role of measurement in building more effective organizations. Juran recommended the adoption of a "quality-spiral" approach to improvement. This approach is simple. The starting point in the spiral is the definition of the school's objectives—what is it supposed to do? Then, historical performance against these objectives is documented so that the

school has a benchmark against which to compare improvements. Once the benchmark is established, the school then adopts a short-term goal for improvement; develops a plan designed to achieve that goal; executes the plan; measures the results; revises the goal or plan as required; executes the plan and, thereafter, continues the spiral of action, measurement, and planning toward improvement into the future. It is to the continuous improvement of all Alberta schools that the *Report Card* is dedicated.

The use of the measurement of results as the basis for improvement is widespread. In many jurisdictions, data relevant to education have become routinely available. For example, the United Kingdom's Department for Education and Employment annually publishes detailed measurements of the performance of primary schools, secondary schools, and colleges, which it distributes widely.<sup>2</sup> Education authorities in Alberta and other provinces annually release data related to K-12 school performance.<sup>3</sup> However, the mere availability of raw data to the public is not sufficient. Our experience in British Columbia, Alberta, and Quebec suggests that action toward improvement is encouraged when clear conclusions are drawn from the data, disseminated broadly, and debated. Education authorities in California and Oregon subscribe to this notion: both have moved beyond simply collecting and publishing performance data. California, under the authority of the Public Schools Accountability Act of 1999, uses an Academic Performance Index<sup>4</sup> (a single statistic much like the *Report Card's* Overall rating out of 10) to rate its elementary, middle, and secondary schools. In Oregon, the Department of Education rates each

of its public schools from Exceptional to Unacceptable in student performance, student behaviour, and school characteristics. It then uses these three ratings as the basis for an overall rating of school performance.<sup>5</sup>

In Canada, The Fraser Institute introduced the first report card on secondary schools in British Columbia in 1998;<sup>6</sup> in 1999, it was followed by the *Report Card on Alberta's High Schools*.<sup>7</sup> In October 2000, the Fraser Institute and the Montreal Economic Institute published the inaugural edition of the *Report Card on Quebec's Secondary Schools*<sup>8</sup> and, last month, the Fraser Institute introduced the inaugural edition of the *Report Card on Ontario's Secondary Schools*.<sup>9</sup>

### **First, we must talk**

The *Report Card* will only serve its purpose when its findings are openly discussed among all those with an interest in a school. But, frank, useful discussion can be difficult to initiate. Teachers and school officials sometimes adopt a defensive attitude and see the *Report Card* as an attack on their ability as professionals. It is not. Teachers, counselors, and school administrators should be committed to continual professional development and, as every educator knows, feedback is a necessary component of learning. The *Report Card* provides a variety of relevant, objective feedback.

Educators would perhaps prefer that school performance data not be made public. They may worry that parents do not have the time or the expertise to analyze and interpret such information correctly. Naturally, there are aspects of the *Report Card* that require interpretation but a broader understanding of school results will undoubtedly follow from discussion and debate among all those concerned with the effectiveness of our schools.

Teachers and principals may fear that parents and taxpayers will understand the results perfectly well and that, as a result, if the school's performance is poor, they will demand change. Dissatisfaction among parents can be a powerful motivator of improvement. Here, in the words of

its principal, is what happened at one school in rural British Columbia when it found itself at the bottom of the *Report Card* ranking:

the fallout or publicity it brought [my school] has allowed me great license in instituting change. For that I thank you (although my thanks is somewhat like a patient thanking a dentist after a painful root canal!!!)

Surely, when teachers, parents, students, administrators, and taxpayers all have easy access to data on school performance and they share the will to discuss it frankly and in detail, Alberta schools and, therefore, the province's students will be the better for it.

### **Some schools do better than others**

The Alberta *Report Card*, like all the other editions, demonstrates that some schools do better than others. Even when we take into account factors such as the students' family background, which are commonly thought to dictate the degree of success among students, individual school results differ. This finding confirms research results from other countries.<sup>10</sup> 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 student success and that some schools make more of a difference than others.

Unfortunately, while educators are eager to trumpet the positive aspects of their school, they are less willing to discuss its shortcomings publicly. The *Report Card* provides objective results—good and bad—and offers educators an opportunity to accept poor results for what they are—a starting point from which to improve.

### **Comparisons are at the heart of the improvement process**

Many school authorities in Alberta use student report cards that include both the student's result and the median mark for each subject in which the stu-

dent is enrolled. They also show any previous marks awarded to the student earlier in the year. Historical data like this will show if the student's marks are improving or deteriorating. All such comparative statistics enable students and parents to understand the results shown on the report card better.

Likewise, comparison of results among schools provides a better understanding of the effectiveness of each school. By comparing a school's latest results with those of earlier years, we can see if the school is improving or not. 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. Reference to overall provincial results establishes an individual school's level of achievement in a broader context.

While the *Report Card* is not about which schools won and which schools lost, there is great benefit in identifying schools that are particularly successful. By studying the proven 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 Employment. Its Beacon Schools<sup>11</sup> program 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 and making comparisons between schools is made simpler and more meaningful by the *Report Card's* indicators, ratings, and rankings.

### **What should we measure?**

While schools in Alberta may serve different student bodies or offer specialized courses or curricula, there are certain basic tasks common to all. The school's teachers should design and execute lesson plans that take into account the differences among students inevitably present in every school. They should ensure that their students master the skills and acquire the knowledge presented in each

course. They should develop and use evaluation methods that provide accurate, timely feedback to students and parents about the student's progress. Effective schools will encourage their students to complete their secondary-school studies in a timely manner. They should help their students prepare for a variety of post-secondary opportunities by encouraging them to enroll in relevant, challenging courses. The *Report Card* presents objective evidence of the extent to which each of the province's schools meet these basic goals.

Our choice of school-performance indicators is dependent on the availability of relevant data. We use only data generated annually and maintained by Alberta Learning so that we can make comparisons from school to school and from year to year.

From these data, for each school, for the five school years 1995/1996 through 1999/2000, we calculated seven indicators of school performance.

#### **1 Average diploma examination mark**

This indicator (in the tables *Average exam mark*) is the average percentage achieved on the uniform final examinations in all of the diploma courses.

#### **2 Percentage of diploma examinations failed**

This indicator (in the tables *Percentage of exams failed*) provides the rate of failure (as a percentage) on the diploma examinations.

#### **3 School versus exam mark difference in diploma courses**

For each school, this indicator (in the tables *School vs exam mark difference*) gives the average of the absolute value of the difference between the average mark obtained on the diploma examinations and the average "school" mark—the accumulation of all the results from tests, essays, quizzes, and so on given in class—for all the diploma courses.

#### **4 English 30 gender gap**

#### **5 Mathematics 30 gender gap**

The *Gender gap* indicators measure the difference, if any, in the average English 30 and Mathematics 30

school marks for boys and girls when their respective average examination marks in the same courses are taken into account.

## 6 Diploma courses taken per student

This indicator (in the tables *Courses taken per student*) measures the average number of diploma courses completed by the students at a school who completed their third year of high school during the year.

## 7 Diploma completion rate

This indicator measures the number of first-time grade 12 students who received a diploma in the year.

From these seven indicators, each school's annual *Overall rating out of 10* is determined. The overall ratings are intended to answer the important question: "Generally, how is your school doing academically?"

While the seven indicators chosen for the *Report Card* provide a useful measure of the effectiveness of the academic program at each school, it is likely that the inclusion of additional measures of school effectiveness would make the *Report Card* even more useful. We plan to add more indicators as relevant data become available and we encourage all interested parties to suggest new measures of school effectiveness that they believe will improve the *Report Card*.

### **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. Nevertheless, the *Report Card* provides a detailed picture of each school that is not easily available elsewhere.

### **Taxpayers have a big stake in our schools**

Finally, the vast majority of Alberta's students attend schools that are wholly or largely financed by taxpayers. For the school year 2000/2001, Alberta's taxpayers will spend more than three billion dollars to operate and maintain the province's elementary and secondary schools. A public expenditure of such magnitude necessitates continued, independent measurement of the system's results. The measurements should be easily available to any interested taxpayer.

### **Does the Report Card have an impact?**

While it is too early to gauge the effect of the *Report Card* on the performance of Alberta's schools precisely, there is strong anecdotal evidence that where it has been introduced, its impact has been positive. Response to its publication is evidence of its effect.

A growing number of school administrators and teachers routinely study the document in search of insights into their school's performance. We regularly receive correspondence demonstrating their interest:

Regardless of the changes we have made, the results of your report have made us seriously reflect on the academic issues of this school . . . We are not doing a very good job with our academics. That is fact. The fact your report makes it public has helped us to speed up the process of [improvement] . . . THANKS!

*A teacher in the Greater Vancouver area*

While many Ministries of Education annually produce data that may be helpful to schools, educa-

tors can see the value of the ratings and comparisons included in the *Report Card*. A district administrator whose schools were not included in the *Second Annual Report Card on Alberta's High Schools* (2000) asked:

Is there any reason why our school was not included? Is it possible for you to do an analysis of our school and to rank it in comparison to [other] schools and programs? I am getting requests from the principal, parents, and trustees about this and any information from you would be most helpful.

The *Report Card* encourages educators to use all relevant data about school performance when they make their improvement plans.

Parents are equally interested in the *Report Card*. Inquiries from parents tend to be of two kinds. First, they seek objective information about the school at which their child is currently enrolled. They use this information as the basis for discussion with school administrators. Often the *Report Card* is the only source of information with which they are familiar. Second, in choosing a school for their children, they ask for detailed interpretation of the individual school results. Typical of the responses from parents is the following:

I recently read "Grading Alberta Schools" in the *Calgary Herald*. I appreciated the work that went into this. I feel it's about time we have more tools to evaluate our education system, make improvements and make our administration accountable for the tax dollars they consume.

*A parent in Alberta*

Overall, the *Report Cards* are seen as a useful aid to the continuing effort to improve our schools. In October of 2000, we published the first annual *Report Card on Quebec's Secondary Schools*. Shortly thereafter, a poll of 525 parents and non-parents in Quebec asked for opinions on the merits of a vari-

ety of methods for improving the province's schools.<sup>12</sup> More than 75% of respondents considered the *Report Card* an important innovation.

### **What is new in this edition of the Report Card?**

Several aspects of the *Report Card* have been improved for this edition. In the past, the ratings of some schools have been affected by the results of students attending continuing education classes and other alternative programs. This year, Alberta Learning provided data that include only the results for day students—these are the students who attend regular daytime classes at the school. As a result, schools can now be more fairly compared. Other changes to the specifications of our data request allowed us to include substantially more schools in this year's *Report Card*. In this edition, we report results for 276 schools, up from just 222 schools last year.

In addition, we have made a number of improvements to the indicators and to the methods of calculation that make the *Report Card* more useful.

### **The Trends indicator tracks changes in school performance over time.**

The *Report Card* provides more than just a snapshot of each school's performance. We now report five years of historical data. Because it is sometimes hard to see if change is occurring simply by scanning the historical data, we have analyzed it to determine whether the school has experienced statistically significant improvement or deterioration on each of the indicators and the *Overall rating out of 10*. The results of the analysis are reported in the *Trends* column in the detailed tables.

### **Improved Gender gap indicators contribute to the Overall rating out of 10**

As we discussed in detail in the second edition of the *Report Card*,<sup>13</sup> there is widespread concern that, in some schools, boys and girls are not equally successful in academics. Last year we introduced a measure of this "gender gap." This

year, we improved the indicator's design and included it in the calculation of the *Overall rating out of 10*. For the first time, each school's rating will be affected by the extent to which the school ensures that both boys and girls are able to succeed.

**A new method of calculating the  
*Overall rating out of 10* and  
the *Trends* indicator**

This year, we have adopted a different method of calculating the *Overall rating out of 10*. The raw data is first transformed into "standardized" or "Z" scores. This transformation is a well-accepted statistical method used to make differing sets of data more comparable. For example, by first standardizing the examination marks for all courses taken by students at a school, we can compare a school's most recent average examination mark

with its historical results more accurately. This is particularly important as the number of years of data that we report increases.

Since the several changes that we have made to the data and methods produce somewhat different results and to ensure that historical data remain comparable, we have recalculated the ratings for all five years reported. This recalculation also allowed us to reflect the *Gender gap* in the historical results.

**Focus on the results in the most  
popular diploma courses**

In this edition, we report the six diploma courses most frequently taken at each school and the average examination results in these courses. This feature provides readers with course-by-course detail that is not available elsewhere in the *Report Card*.





# 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, 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 diploma examination mark
- 2 percentage of diploma examinations failed
- 3 difference between the school mark and examination mark in diploma courses
- 4 difference between male and female students in the value of indicator (3) for English 30 only
- 5 difference between male and female students in the value of indicator (3) for Mathematics 30 only
- 6 diploma courses taken per student
- 7 diploma completion rate.

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.

## Three indicators of effective teaching

### 1 Average diploma examination mark

This indicator (in the tables *Average exam mark*) is the average percentage achieved by a school's day students on the uniform final examinations in all of the diploma courses.<sup>14</sup> For each school, the indicator is the average of the mean scores achieved

by the school's students in each of the diploma examinations at all sittings during the year, weighted by the relative number of students who completed the course.

Examinations are designed to achieve a distribution of results reflecting the differences in students' mastery of the course work. Differences among students in interests, 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 provincial examinations. 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 examination mark for each school as one indicator of effective teaching.

### 2 Percentage of diploma examinations failed

For each school, this indicator (in the tables *Percentage of exams failed*) provides the rate of failure (as a percentage) in the diploma examinations. It was derived by dividing the sum, for each school, of all diploma examinations written where a failing grade was awarded by the total number of such examinations written by the students of that school.

In part, effective teaching can be measured by the ability of the students to pass any uniform examination that is a requirement for successful completion of a course. Schools have the responsibility of preparing their students to pass these final examinations.

There is good reason to have confidence in this indicator as a measure of effective teaching. A student need only successfully complete two diploma courses in order to graduate. Such a student's course of study may not include the prerequisites for all post-secondary educational options but it will be sufficient for graduation from high school. Thus, students enroll in the diploma courses, in large measure, because they want to take them. Further, their success in grade 12 reflects to a certain extent how well students have been prepared in the lower grades. All of the diploma courses have prerequisite courses. Indeed, depending on the school, admission to some of the grade 12 courses may require that the student have received a prescribed minimum grade in the prerequisite lower-level course. Since the decision to take diploma courses is, for the most part, voluntary and requires demonstrated success in previous courses, it seems reasonable to use the percentage of examinations failed in these courses as an additional indicator of the effectiveness of the teaching in secondary schools.

### 3 Difference between school mark and examination mark

For each school, this indicator (in the tables *School vs exam mark difference*) gives the average of the absolute value of the difference between the average mark obtained on the diploma examinations and the average "school" mark—the accumulation of all the results from tests, essays, quizzes, and so on given in class—for all the diploma courses.<sup>15</sup>

Effective teaching includes regular testing so that students may be aware of their progress. For such assessment to be useful, it must reflect the student's understanding of the course accurately. As a systematic policy, inflation of school-awarded grades will be counterproductive. Students who believe they are already successful when they are not will be less likely to invest the extra effort needed to master the course material. In the end, they will be poorer for not having achieved the

level of understanding that they could have gained through additional study. On the other hand, the systematic deflation of grades can work to the detriment of students in those situations where post-secondary admissions and scholarship awards are, in part, based on school assessments. Students may also lose interest in a subject when their actual understanding of the material is disparaged by inadequate recognition.

The effectiveness of school-based assessments can be determined by a comparison to external assessments of the students. For each diploma course, Alberta Learning, the same authority that designed the course, administers its uniform examination. This examination will test the students' knowledge of the material contained in the course. If the mark assigned by the school is a reasonably accurate reflection of students' understanding, it should be roughly the same as the mark gained on the diploma examination. Thus, if a school has accurately assessed a student as consistently working at a C+ level, the student's examination result will be at a similar level. If, however, a school is consistently granting marks substantially different from those achieved by its students on the final examinations, then the school is not providing an accurate indicator of the extent to which knowledge of the course material is being acquired.

### An indication of consistency in teaching and assessment

#### The Gender gap indicators

Research<sup>16</sup> has shown that, in British Columbia's secondary schools, there are systematic differences between the academic results achieved by boys and those achieved by girls. These differences are particularly apparent where the local school makes the assessments. These findings are supported by data from Alberta Learning. However, the same research found that "there appears to be no compelling evidence that girls and boys should, given effective teaching and counselling,

experience differential rates of success.”<sup>17</sup> Further, “[t]he differences described by each indicator vary from school to school over a considerable range of values.”<sup>18</sup>

The *Gender gap* indicators measure the difference, if any, in the average Mathematics 30 and English 30 school marks for boys and girls when their respective average examination marks in the same courses are taken into account. For each course, the indicator value is determined according to the formula:

$$\frac{(\text{Female school mark} - \text{Female exam mark}) - (\text{Male school mark} - \text{Male exam mark})}{\dots}$$

The indicator reports the size of the difference and the more successful sex.

The *Gender gap* indicators are affected by at least two factors. If the components of the curriculum tested at the school level are different from those tested on the diploma examination, a high gender gap indicates that the favoured sex is, on average, more successful in acquiring the skills and knowledge embodied in those aspects of the curriculum tested at the school level. If the components of the curriculum tested at the school level are the same as those tested on the diploma examination, then a high gender gap indicates that the school-based assessment may be biased in favour of one sex or may include factors in the assessment other than understanding of the curriculum. In either case, schools experiencing high gender gaps should investigate classroom practice to determine why one sex receives better grades than the other.

### **Two indicators of practical, well-informed counselling**

While they are attending secondary school, students must make a number of decisions of considerable significance about their education. They will, for instance, annually decide whether to begin or continue learning a second language. In grade 10, they are required to choose between

different streams in several core subject areas. In grade 12, they may face the choice of completing high school or abandoning it in favour of full-time work.

Will these young people make good decisions? It is unrealistic to presume that they can do so without advice. What practical, well-informed counselling can they call upon? While parents, in the main, are willing to help, many lack the information they need to be able to provide good advice. It falls, therefore, to the schools to shoulder some responsibility for advising students and their parents about educational choices.

The final two indicators used in the calculation of the *Overall rating out of 10* assess the counsel given by the schools by measuring the quality of the decisions taken by the students about their education. Of course, wise students will seek guidance not only from the counsellors designated by the schools but also from teachers and administrators, parents, and other relatives. Where students have strong support from family and community, the school’s responsibility for counselling may be lighter; where students do not have such strong support, the school’s role may be more challenging. These indicators measure the school’s success in using the tools at its disposal to help students make good decisions about their education.

There are two very important decisions that senior students must make. First, they must decide whether or not to take a number of academically challenging diploma courses. Second, having made it through school to the end of September in grade 12, they must decide whether to stick it out, do the work, and graduate with their class. Effective counselling will encourage students to make appropriate choices.

#### **1 Diploma courses taken per student**

This indicator (in the tables *Courses taken per student*) measures the average number of diploma courses completed by those students at the

school who completed their third year of high school during the reported year. It is derived by summing this same statistic for all the diploma courses.

In their senior years, students have freedom to choose from a considerable variety of courses. Their choices will have an impact upon their literacy, numeracy, and analytical skills upon graduation. Their choices also affect the post-secondary options open to them.

Diploma courses offer study at the senior level in a variety of core disciplines: English language arts (or French for francophone students), Mathematics, the sciences, and the humanities. Alberta Learning has developed courses in each discipline that reflect the post-secondary ambitions of different groups of students and, far from being courses only for a university-bound elite, these courses teach skills and knowledge that will benefit students no matter what they plan to do after graduation. Further, it is the marks obtained in these courses that are commonly used by post-secondary institutions—institutes of technology and community colleges as well as universities—to assess the applicant's readiness for further study and for admission to programs with limited enrollment. Thus, for most students a decision to take advantage of these courses is a good one and a school that is successful in encouraging students to take these courses shows that it offers practical, well-informed counselling.

## 2 Diploma completion rate

This indicator reports the percentage of first-time grade 12 students who received a diploma in the reported school year. It is derived from data provided by Alberta Learning.

Graduation from secondary school retains considerable value since it increases options for post-secondary education. Further, graduates from secondary school who decide to enter the work force immediately will, on average, find more job opportunities than those who have not graduated.

By completing the 11 years of schooling in preparation for the final high-school year, students have already demonstrated a reasonable ability to handle the basic courses offered by the school. Moreover, for the majority of students, the minimum requirements for graduation are not onerous. The chance that students will not graduate solely because they are unable to meet the intellectual demands of the curriculum is, therefore, relatively small.

Nevertheless, the graduation rate varies quite widely from school to school throughout the province. While there are factors not related to education—emigration from the province, sickness, death, and the like—that can affect the data, there is no reason to expect these factors to influence particular schools systematically. Accordingly, we take variations in the graduation rate to be an indicator of the extent to which students are being well coached in their educational choices.

### **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 as 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. Because no diploma completion data were available for the year, 1995/1996, the overall rating was calculated using the remaining six indicators. (See Appendix 1 for an explanation of the calculation of the *Overall rating out of 10*.)



# Other indicators of school performance

Since the inception of the *Report Card*, we have added 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 Trends 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.

In order to detect trends in the performance indicators, we developed the *Trends* indicator. This indicator uses statistical analysis to identify those dimensions of school performance in which there has 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 where five years of data are available and where it is determined to be 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

To what extent do socio-economic factors affect the school’s *overall rating out of 10*? Educators can and should take into account the abilities, inter-

ests, and backgrounds of their students when they design their lesson plans and deliver 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. The effective school will produce good results regardless of the family background of its students.

The socio-economic indicator was derived as follows. First, using Alberta Learning enrollment data sorted by census enumeration area and census data provided by Statistics Canada,<sup>19</sup> we established a profile of the student body’s home characteristics for each of the schools in the *Report Card*. We then used multiple regression—a tool used in statistical analysis—to determine which of the home characteristics were associated with variations in school performance as measured by the *Overall rating out of 10*.

Taking into account all of these variables simultaneously, we identified one characteristic which possessed a statistically significant association with the *Overall rating*: the average number of years of education of the most educated parent in a two-parent family (or of the lone parent in a single-parent family). When a school had children whose parents are more highly educated, the overall rating at the school was likely to be higher. We have adopted this statistic—noted in the tables as *Parents’ average education (yrs)*—as the socio-economic indicator for this edition of the *Report Card*.

This measure of the socio-economic background of a school’s student body is presented

with two important notes of caution. First, when all the schools in the *Report Card* are considered, only about 17% of the variation between schools in the *Overall rating* is associated with the socio-economic factors studied. Clearly, many other factors—including good teaching, counselling, and school administration—contribute to the effectiveness of schools. Second, these statistical measures 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 the school enables all of its students to succeed, the weaker will be the relationship between the home characteristics of its students and their academic success. Thus, this socio-economic indicator should not be used as an excuse or rationale for poor school performance.

Results of the multiple regression analysis used to derive this socio-economic indicator can be found in Appendix 2.

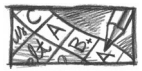
### **Specific Course Results**

Are there any academic strengths or weaknesses at the school? While the basic academic indicators and the *Overall rating* provide an overview of the effectiveness of the school's academic programs, they do not tell us anything about the

relative effectiveness of the specific academic departments within the school.

For example, the students at Strathcona School in Edmonton do better in some subject areas than in others relative to the provincial average. In Biology 30 and Chemistry 30, for instance, the *Average exam mark* at the school is substantially higher than for the province, whereas, the marks in Social Studies 30 and Physics 30 are close to the average.

These data, noted in the tables as *Most popular courses (1999/2000)* provide a snapshot of the most recent year's results in those diploma courses most frequently taken at the school so that comparisons between different departments at the same school can be made. We report the *Average exam mark* for each of these courses as a measure of the department's teaching effectiveness. The *Student participation rate* indicates the extent to which the students have been encouraged to involve themselves in the subject area. The *Student participation rate* is the ratio, for a school, between the number of students who have completed a given diploma course and the number of students enrolled in their third year of high school—usually grade 12. This information along with course-specific data from table 1 (page 21) can help parents, teachers, and administrators select specific subject areas where student achievement or participation rates might be improved.



# Notes

- 1 A good overview of the role of chief operating officers—and a school principal can certainly be considered the COO of a school—in quality and improvement can be found in J.M. Juran, *Juran on Leadership for Quality: An Executive Handbook* (New York: The Free Press, 1989).
- 2 Department for Education and Employment web site: <http://www.dfee.gov.uk/perform.shtml> (April 11, 2001)
- 3 See, for instance, [http://www.learning.gov.ab.ca/k\\_12/testing/default.asp](http://www.learning.gov.ab.ca/k_12/testing/default.asp) for a selection of reports on student outcomes.
- 4 For further information, see <http://www.cde.ca.gov/psaa/api/>.
- 5 For further information, see <http://reportcard.ode.state.or.us/>
- 6 Peter Cowley, Stephen Easton, and Michael Walker, *A Secondary Schools Report Card for British Columbia*, Public Policy Sources 9 (Vancouver, BC: The Fraser Institute, 1998).
- 7 Peter Cowley and Stephen Easton, *The 1999 Report Card on Alberta's High Schools*, Public Policy Sources 29 (Vancouver, BC: The Fraser Institute, 1999).
- 8 Peter Cowley and Richard Marceau, *Report Card on Quebec's Secondary Schools: 2000 Edition* (Vancouver, BC: The Fraser Institute, 2000).
- 9 Peter Cowley with Shahrokh Shahabi-Azad, *Report Card on Ontario's Secondary Schools: 2001 Edition* (Vancouver, BC: The Fraser Institute, 2001).
- 10 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 Joseph F. Johnson, Jr., *Case Studies from the National Study of High-Performing, High-Poverty Schools*, digital document: <http://www.starcenter.org/priority/casestudies.htm> (April 11, 2000) (STAR Center at the Charles A. Dana Center, University of Texas at Austin).
- 11 See the Beacon Schools program site at <http://www.standards.dfee.gov.uk/beaconschools/>.
- 12 The poll was conducted by Ad Hoc Recherche for the magazine, *Les Affaires*; see Kathy Noël, Pour une école plus traditionnelle, *Les Affaires* 73, 9 (March 3, 2001): page 9.
- 13 Peter Cowley and Stephen Easton, *Second Annual Report Card on Alberta's High Schools*, Studies in Education Policy (Vancouver, BC: The Fraser Institute, 2000).
- 14 The following diploma courses were offered for at least some of the years between 1995/1996 and 1999/2000: Applied Mathematics 30, Biology 30, Chemistry 30, English Language Arts 30, English



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- Language Arts 33, Français 30, Mathematics 33, Physics 30, Pure Mathematics 30, Science 30, Social Studies 30, Social Studies 33. Students enrolled in francophone programs may write the examinations for many of these courses in French.
- 15 For purposes of the calculation of the final mark, the school-awarded mark and the diploma examination mark each count for 50% except for Applied Mathematics 30 and Pure Mathematics 30, where the diploma examination counts for 20% of the final mark during the introductory phase of these new courses.
- 16 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).
- 17 Cowley and Easton, *Boys, Girls, and Grades*: page 7.
- 18 Cowley and Easton, *Boys, Girls, and Grades*: page 17.
- 19 Census 1996 data for the custom geographies used in the development of the socio-economic measures were provided by Statistics Canada

