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Report Card on Quebec's Secondary Schools

2001 Edition

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Introduction

When the *Report Card on Quebec's Secondary Schools* was introduced last year, the reaction was immediate. Hundreds of reports and editorials appeared in newspapers and on radio and television across the province. The newspaper *Le Devoir* reported that the number of applications for admission to high-ranking schools increased markedly following the *Report Card's* publication.¹ When a poll of 525 adult residents of Quebec—both parents and non-parents—asked respondents for opinions on the merits of a variety of methods for improving the province's schools,² more than 75% considered the *Report Card* an important innovation. For weeks, students, parents, educators, ministry of education officials, and taxpayers focused on school results. Such intense interest is critical to the process of improving Quebec's schools.

First, we must talk

While the reaction to it is encouraging, the *Report Card* will serve its purpose only when its findings are openly discussed among all those with an interest in the school. But, frank useful discussion is difficult to initiate. When confronted with the *Report Card* for the first time, teachers and school officials sometimes adopt a defensive attitude. They see it as an attack on their professional performance. 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. Since it is an objective report on each school's past effectiveness, the *Report Card* provides a variety of relevant data.

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 inclusive discussion and debate.

Teachers and principals may fear that parents and taxpayers will understand the results perfectly well and that, if the school's performance is poor, they will demand change. Disquiet among parents can be a powerful motivator of improvement. Here, in the words of its principal is what happened at one rural school in British Columbia when it found itself at the bottom of the *Report Card* ranking.

[T]he 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 school performance data and they share the will to discuss it frankly and in detail, Quebec's schools and, therefore, the province's students will be the better for it.

Some schools do better than others

The *Report Card* demonstrates that some schools do better than others. Even when we take into account factors such as students' individual characteristics and family background—commonly

thought by some to dictate the degree of student success—individual school results differ. This finding simply confirms research results from other countries.³ 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 difference than others.

Unfortunately, while educators are eager to trumpet the positive aspects of their school, they are unwilling 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

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 schools that parents and educators see as having 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 high-performing schools, 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 program⁴ identifies schools across the United Kingdom that have demonstrated expertise in any of 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 *Report Card's* indicators, ratings, and rankings.

What should we measure?

While Quebec's secondary schools may differ in the students they serve, they must all satisfy certain basic student needs. The school's teachers should ensure that their students master the skills and acquire the knowledge presented in each course. They should provide accurate, timely feedback to students and parents regarding the student's progress. They should design and execute lesson plans that take into account those differences in individual student characteristics inevitably present in every school. Effective schools will encourage their students to complete their secondary school studies on time. The *Report Card* presents objective evidence of the extent to which each of the province's schools meet these basic needs.

Our choice of school performance indicators was largely dependent on the availability of relevant data. We selected only annually generated data maintained by the Ministry of Education so that they would be comparable from school to school and from year to year.

From these data, for each school, for the seven school years 1993/1994 through 1999/2000, we calculated six indicators of school performance.

- 1 the average uniform examination⁵ mark received by the school's students on four important Secondary IV and Secondary V courses;
- 2 the percentage of these examinations that the students failed;
- 3 the extent to which their average, raw school-based mark exceeds their average raw provincial examination mark in these four courses (an indication of school-level grade inflation);

- 4 the difference in the average examination marks of male and female students in Secondary V first language courses;
- 5 the difference in the average examination marks of male and female students in Secondary IV physical science; and,
- 6 new this year, a measure of the extent to which each school encourages and assists its students to stay in school and finish their chosen secondary program on time.

Each school's annual *Overall rating out of 10* is calculated using these six indicators. The overall ratings are intended to answer the important question: "Generally, how is the school doing academically?"

While the indicators chosen for the *Report Card* provide a useful measure 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* is a valuable tool for use in the decision-making process. 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 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 but 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 Quebec's students attend schools that are wholly or partly financed by taxpayers. For the school year 1999/2000, Quebec's taxpayers spent more than seven and one-half billion dollars on the operation and maintenance of the province's elementary and secondary schools. A public expenditure of such magnitude necessitates continued, independent measurement of the schools' results. The measurements should be easily available to any interested taxpayer.

What is new in this year's Report Card?

The Promotion rate indicator

As noted above, with this edition we introduce a new indicator noted in the tables as *Taux de promotion*. It measures the likelihood that the school's Secondary IV students will stay in school and complete the general program of studies⁶ on time. This new indicator complements the other five. While they are evidence of the quality of the school's teaching in the general program, the *Promotion rate* indicates, first, the extent to which the school is successful in keeping its students in school and, second, the extent to which the school is successful in encouraging students to obtain their general program diploma without delay.

Indicators of the composition of the student body

In last year's *Report Card* we provided the average parents' income for each school as an indication of the family background of its student body. This indicator was designed to allow more meaningful

comparison among schools by identifying schools where the family backgrounds of its students are roughly similar. It could also be used to estimate the extent to which the actions of the school affected student success—that is, the value added by the school.

This year, we have added two new indicators of the composition of the student body. Both relate to the individual characteristics of the school's students. First, for each school we include the percentage of its Secondary IV and Secondary V students (noted in the tables as *EHDAA (%)*) who, as a result of their special needs, attract extra ministry of education funding for their local school authority. Such students' disabilities are referred to collectively as EHDAA.⁷ A high proportion of EHDAA students is generally associated with lower school performance.

Second, for each school we include the percentage of its Secondary IV students who were 16 years of age or older at the beginning of the school year (noted in the tables as *En retard (%)*). Since it is likely that at least some of these students have encountered difficulty with their academic work in the

past and as a result have fallen behind their classmates, we can use this indicator to further characterize the school's Secondary IV and V student population for the purpose of the calculation of the value added by the school. A high proportion of older students in Secondary IV also appears to be associated with lower school performance.

An adjustment for value added by the school

The addition of new measures of the composition of each school's student body has enabled us to refine our estimate of the value added by each school. The *Adjustment for value added* (noted in the tables as *Ajustement valeur ajoutée*), when added to the *Overall rating out of 10*, reports the contribution (in rating points) made by the school to its overall rating. The continued improvement of the value-added estimator is an important step in determining the relative effectiveness of schools in contributing to their students' success.

Last year's launch of the *Report Card on Quebec's Secondary Schools* was, by any measure, a success. The improvements made to this year's edition will make the *Report Card* even more useful.



A measure of academic effectiveness for secondary schools

The foundation of the *Report Card* is an overall rating of each school's academic performance. Building on student-results data provided by the Ministry of Education, we rate each school on a scale from zero to 10.

How does the school perform on key academic indicators?

We base our overall rating of each school's academic performance on the students' results in four core academic courses. They are Secondary V level courses in the language of instruction and the second language and Secondary IV level courses in the History of Quebec and Canada and the Physical Sciences. The results used as indicators are:

- average uniform examination mark;
- percentage of uniform examinations failed;
- school level grade inflation;
- difference between the examination results of male and female students in Secondary V level language of instruction courses, and
- difference between the examination results of male and female students in Secondary IV level physical sciences.
- a measure of the likelihood that students enrolled at the school will complete their selected program of studies in a timely manner.

The first five indicators demonstrate the school's success in equipping all its students with the

knowledge and skills embodied in the curricula. The last indicator demonstrates the extent to which the school is successful in keeping its students on task and on time as they complete the last two years of their secondary school program.

We have selected this set of indicators because they provide systematic insight into a school's performance.⁸ 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 and counselling

1 Average uniform examination mark

For each school, under the heading *Résultats aux épreuves*, the table lists the average raw uniform examination mark achieved by its students in each of the four core courses at the June examination sitting in each school year. For the purposes of determining the trend, if any, over time and the *Overall rating out of 10*, the average marks for all four courses are combined to produce an overall average mark. Detailed explanations of the method used to calculate trends and the overall ratings are included in the relevant sections below.

Examinations are designed to achieve a distribution of results reflecting the inevitable differences in students' mastery of the course work. Differences among students in interests, abilities, motivation, and work-habits will, of course, have

some impact upon the final results. However, there are recognizable differences from school to school within a district in the average results on the provincial uniform examinations. There is also variation within schools in the results obtained in different subject areas. Such differences in outcomes cannot be explained solely by the personal and family characteristics of the student body. It seems reasonable, therefore, to include these average uniform examination marks for each school as one indicator of effective teaching.

2 Promotion rate

During the secondary school years, students must make a number of decisions of considerable significance about their education. They will choose the priority that they will assign to their studies. They will choose among optional courses. They will plan their post-secondary educational or career paths.

Will these young people make good decisions? It is unrealistic to presume that they can do so without advice, encouragement, and support. 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 these and other educational choices. 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.

One of the most important decisions that students must make is to stay in school and complete their chosen programs of study in a timely manner. This year we have introduced a new indicator—the *Promotion rate* (noted in the tables as *Taux de promotion*)—which measures the proportion of

students in each school who have decided to continue their studies. While there are factors not related to education—absence or emigration from the school or 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 *Promotion rate* to be an indicator of the extent to which students are being well coached in their educational choices. It is a composite result calculated from two measures.

(a) *The proportion of students who stay in school*

The first component of the *Promotion rate* indicator gives credit to schools for the extent to which their students remain in school. While some students may require more time to complete the general program than is normally the case and other students may transfer from the general program into a less rigorous program of study, we believe that, as the minimum, schools should encourage and assist students to finish a program of secondary-school study. This component was determined as follows. First, we calculated the proportion of the school's Secondary IV students who receive their general program diploma at the end of the school year or return in the following year to enroll at level Secondary IV or Secondary V in either of the general or professional programs for school-aged students. Then, we multiplied the result by the proportion of the school's Secondary V students who either receive their diploma at the end of the school year or return in the following year to enroll at level Secondary V in either of the general or professional programs for school-aged students.

(b) *The proportion of students who receive their general program diploma on time*

The second component of the *Promotion rate* indicator provides a more rigorous test of the school's ability to ensure that its students stay on task. It was calculated by multiplying the proportion of the general program students at the school who

enrolled in Secondary IV at the beginning of the year and either received their general program diploma or were promoted to the Secondary V level at the end of the year by the proportion of the school's students who registered in Secondary V at the beginning of school year and who obtained their diploma in the same school year.

Note that neither of the two components used in the calculation of the *Promotion rate* indicator is a measure of the results of a single cohort of students. Instead, we calculate the results for an "instant cohort" comprising the Secondary IV and Secondary V students enrolled at the school in the same year.⁹ Using a real student cohort, for example that of students who began Secondary IV in September of 1998 and were scheduled to receive their diplomas in June of 2000, would not measure the effectiveness of the individual school but that of the school system because the available data reports student achievement within the entire education system as a whole. Thus, students at one school in Secondary IV could receive their diploma at another school in the following years. Which school should get credit for these students' timeliness? A further advantage of the "instant-cohort" method of calculation is that it reflects more accurately the effectiveness of the school in a single school year by taking into account the results for students in both Secondary IV and Secondary V. Thus, the *Promotion rate* indicator is compatible with the other indicators used in the *Report Card*. The use of the "instant cohort" follows methodology developed by France's national ministry of education.¹⁰

Finally, we averaged these two components to calculate the composite *Promotion rate*.

3 School level grade inflation

For each school, this indicator (noted in the tables as *Surestimation par l'école (%)*) measures the extent to which the average "school" mark—the accumulation of all the results from tests, essays, quizzes and so on given in class—exceeds the average uniform examination mark obtained in the four

core courses. Where a school's average examination mark is higher than the average school mark, the school is assigned a zero on this indicator.

Effective teaching includes regular testing of students' knowledge so that they may be aware of their progress. 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 achieved through additional study.

The effectiveness of school-based assessments can be determined by a comparison to external assessments of the students. The same authority—the Ministry of Education—that designed the courses administers the uniform final examinations. These examinations will test the students' knowledge of the material contained in the courses. If the marks assigned by the school reflect a level of achievement that the student subsequently achieves or exceeds on the uniform examination, then the school has not deceived the student into believing that learning has occurred when it has not. It seems reasonable, therefore, to use this indicator as a second measure of effective teaching.

Indicators of equitable teaching

Effective schools will ensure that all their students are assisted and encouraged to reach their potential regardless of any real or perceived disadvantages resulting from personal or family characteristics. At such schools, teachers will take into account the characteristics of their students when they develop and execute their lesson plans. In doing so, they will reduce the probability that systematic differences in achievement are experienced by sub-populations within the student body.

1 Percentage of diploma examinations failed

For each school, this indicator (noted in the tables as *Échec (%)*) provides the combined rate of failure (as a percentage) on the uniform examinations that form part of the four core courses. It was derived by dividing the sum, for each school, of the uniform examinations written by the students where a failing grade was awarded by the total number of such uniform examinations written by the students of that school.

In part, effective teaching can be measured by the ability of all 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 equitable teaching. First, these courses are very important to students regardless of their post-secondary plans. In order to obtain a general program diploma, students must successfully complete two of these courses (language of instruction at the Secondary V level and History of Canada and Quebec at the Secondary IV level). Anglophone students must also successfully complete French as a second language at the Secondary V level. The Secondary IV level Physical Science course is a prerequisite for a variety of CEGEP courses. Second, since each of these courses has prerequisite courses, their successful completion also reflects how well students have been prepared in the lower grades. Since successful completion of the courses is critical for all students and requires demonstrated success in previous courses, it seems reasonable to use the percentage of uniform examinations failed as an indicator of the effectiveness of the school in meeting the needs of all its students.¹¹

2 The Gender Gap indicators

In a study of gender differences in the academic results of British Columbia students, it was found that “there appears to be no compelling evidence that girls and boys should, given effective teach-

ing and counselling, experience differential rates of success.”¹² However, the data from Quebec's Ministry of Education upon which this study is based provides evidence that there are systematic differences in the results of these groups on the Ministry's uniform final examinations. For example, the 1999/2000 results show that on average female students score about 4½ percentage points higher on the language of instruction examinations than male students do, and about 1 percentage point higher on the Secondary IV physical science examinations.

The indicators—*Écarte sexes (%): langue maternelle* and *Écarte sexes (%): sciences physiques*—are calculated by determining the difference between the two sexes in the average uniform examination results on each of the courses.¹³ Where both English and French language of instruction examinations were written at the school, the differences between the two sexes were weight-averaged according to the enrolment in each of the languages.

Why are female students seemingly at an advantage over male students in their relative exam results? Schools with a low gender gap are more successful than are others in helping students of both genders to reach their potential.

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. 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 out of 10*—in the tables, *Cote globale (sur 10)*.

To derive this rating, the results for each of the indicators, for each year, 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 be combined and compared. In the case of the *Average examination mark (%)* indicator, the standardized scores for all four of the course average marks were first combined and then re-standardized to produce a standardized overall average uniform final examination mark. For all the other indicators, the raw indicator values were standardized directly.

The standardized scores were then weighted and combined to produce an overall standardized

score. Note that for 1999/2000, *Promotion rate* became the sixth indicator to contribute to the calculation of the *Overall rating out of 10*: in the previous years, only the other five indicators were used. Finally, this overall standardized score was converted into an overall rating. (Explanatory notes on the calculation of the *Overall rating out of 10* are contained in Appendix 1.)

The *Overall rating out of 10—Cote globale (sur 10)*—answers the question, “In general, how is the school doing, academically?” It is from this *Overall rating out of 10* that the school’s provincial rank and its rank within the administrative region are determined.



Other indicators of school performance

The *Report Card* also includes a number of indicators that, while they do not contribute to the *Overall rating out of 10*, can provide useful information about each school's effectiveness.

Is the school improving academically? The Trends indicator

For all but the *Promotion rate* indicator, the *Report Card* provides seven 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. However, it can sometimes be difficult to determine whether a school's performance is improving or deteriorating simply by scanning several years of data. This is particularly the case in the measurement of examination results. In one year, a relatively easy annual uniform examination may produce a high average mark and a low failure rate. In the following year, the opposite may occur. It can, therefore, be difficult to tell whether an individual school's result is changing over time due to real change in school performance or due to differences in the make-up of the annual examination.

To detect trends more easily in the performance indicators, we developed a trends indicator (noted in the tables as *Tendences*). It uses regression analysis to identify those dimensions in which the standardized scores achieved by the school show a statistically significant change.¹⁴ In these circumstances, it is likely that the school's results have actually changed relative to the results

of other schools. Because trend calculation is very uncertain when only a small number of data points are available, trends are calculated only in those circumstances where at least six years of data are available.

To what extent do non-school factors affect the school's Overall rating out of 10?

Certainly, educators can and should take into account the abilities, interests, and backgrounds of their students when they design their lesson plans and deliver the curriculum. By doing so, they can minimize the effect of any disadvantages that their students may have. Nonetheless, it is useful to isolate the "value added" to the students' achievement by the school. By doing so, we will be able to identify those schools that appear to be making a greater contribution than others to their students' success. In order to isolate this "school effect" and to provide readers with more information regarding the personal and family characteristics of the school's student body, the *Report Card* includes four indicators related to non-school factors.

- 1 *EHDAA (%)* indicates the proportion of Secondary IV and Secondary V students at the school with learning disabilities or other handicaps. This indicator is produced directly from data provided by the Ministry of Education.

Note that only students whose schools are eligible for additional ministry funding as a result

of their disability are counted in the calculation of this ratio. With few exceptions, private schools are not eligible for EHDAA funding. Thus, while such schools may enroll students who, in a public school, would be classified as EHDAA, these private schools are nonetheless shown in the *Report Card* as having no EHDAA enrollment.

- 2 *Late entry* (noted in the tables as *En retard (%)*) indicates the proportion of the students who are 16 years of age or older when beginning their Secondary IV year. Along with *EHDAA (%)*, this indicator gives us some insight into the personal characteristics of the school's students as they begin the last two years of their secondary school program. This indicator is produced directly from data provided by the ministry of education.
- 3 *Average parents' employment income* (noted in the tables as *Revenu des parents*) indicates the average parental income from employment enjoyed by the families of the school's students and is reflective of the student body's family background. This indicator was calculated using enrollment data provided by the ministry of education and income data provided by Statistics Canada.
- 4 *Adjustment for value added* (noted in the tables as *Ajustement valeur ajoutée*) is an estimate of the contribution of statistically important non-school factors to the *Overall rating out of 10*.

We calculated the *Adjustment for value added* as follows. First, using by-postal-code enrollment data provided by the Ministry of Education and socio-economic data derived from the 1996 Census,¹⁵ we established a profile of the student body's family characteristics for each of the schools in the *Report Card*. We added to this profile the average values for student characteristics (*EHDAA* and *Late entry*) and certain school characteristics (student enrollment, school sector). We then used multiple regression—a tool used in statistical analysis—to determine which of these factors 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 several factors that possessed a statistically significant association with the *Overall rating*. Details of our findings are reported in Appendix 2. The relative importance of the two factors *Late entry (%)* and *Average parents' employment income* led us to adopt them for use in the calculation of the *Adjustment for value added*.

The *Adjustment for value added* when added to *Overall rating out of 10*, provides our best estimate of the contribution of the school to the success of its students. For example, at l'École Donnacona, the *Overall rating out of 10* for 1999/2000 is 7.3 and the *Ajustement valeur ajoutée* is -0.6. When we add these two values together, the sum is a new value of the overall rating adjusted so that the non-school factors are removed. Thus in the case of Donnacona we estimate that what happens at the school contributes 6.7 rating points out of 7.3: the personal and family characteristics contribute the other 0.6. Compare this to the results for École polyvalente de Cabano. At this school with a lower *Average parents' employment income* value and a high *Late entry* value, the non-school factors contribute nothing (*Adjustment for value added* equals 0) and we estimate that the school contributes all of the reported *Overall rating out of 10*. Thus, while the school contribution at both schools is the same, favourable non-school factors resulted in a higher overall rating for Donnacona.

This measure of the value added by the school is presented with two important notes of caution. First, when all the schools in the *Report Card* are considered, only a small amount of the variation among schools in the *Overall rating* is associated with the socio-economic and student 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 non-school factors 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 characteris-

tics of its students and their academic success. Thus, these socio-economic indicators should not be used as an excuse or rationale for poor school performance.

Notes

- 1 Marie-Andrée Chouinard(2000). Palmarès des écoles secondaires: l'école privée profite de ses bonnes notes. *Le Devoir* (Montreal), December 13.
- 2 The poll was conducted by Ad Hoc Recherche for *Les Affaires* magazine and the results were reported in the article: Kathy Noël (2001). Pour une école plus traditionnelle. *Les Affaires* 73, 9 (March 3): 9.
- 3 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 Publishing Ltd., 1988); and, Joseph F. Johnson, Jr., *Case Studies from the National Study of High-Performing, High-Poverty Schools* (STAR Center at the Charles A. Dana Center University of Texas at Austin; digital document: <http://www.starcenter.org/priority/casestudies.htm> (August 7, 1999).
- 4 The Web site for the Beacon Schools program is <http://www.standards.dfee.gov.uk/beaconschools/>.
- 5 The uniform examinations results that are presented and analyzed in the *Report Card* are: Language of Instruction, Secondary V level, English or French; Second language, Secondary V level, English or French; Physical sciences, Secondary IV level; and History of Quebec and Canada, Secondary IV level. The term "uniform examination" refers to those examinations set and administered by the Ministry of Education in courses that are required for certification of studies or that are pre-requisites for important post-secondary courses.
- 6 The general program is pursued by most students. It equips them to continue their studies after graduation at a CEGEP or other post-secondary institution.
- 7 EHDAA is the abbreviation for "Enfants handicapés ou en difficulté d'acquisition et d'apprentissage." EHDAA students have been assessed with any of a variety of physical, emotional, mental, or behaviour disadvantages and the public schools that they attend receive additional funds for use in the EHDAA students' education.
- 8 The student data from which the various indicators in this *Report Card* are derived is contained in databases maintained or controlled by the Government of Quebec, Ministry of Education.
- 9 It would have been useful to know the proportion of pupils progressing without delay through all five years of secondary. However, a significant proportion of the schools in the *Report Card* offer only the last two years of secondary instruction. For this reason, it is impossible to use five-year promotion rates to

- compare all the schools in the *Report Card*. In any event, it is probable that dropout rates are highest after most of the students have reached the age of 16 years, after which school attendance is not mandatory.
- 10 See <http://193.51.6.240/ival/brochure.html>. The French ministry uses the expression “fictitious cohort” to distinguish the group of students from a real cohort. We prefer the expression “instant cohort” because it expresses not only the fact that it differs from the real cohort but also that this concept is based on a single year’s student results. If the main advantage of using the instant cohort is that it relates student promotion to the efforts of a single school in a single year, the disadvantage is that it disregards possible differences between the student groups—Secondary IV and Secondary V students—that make up the instant cohort. However, since we intend to report this *Promotion rate* annually, it will be possible to mitigate this problem through analysis of a time series of data.
 - 11 Note that in previous years, this indicator measured courses failed rather than uniform examinations failed. For this reason, the raw values for the school year 1999/2000 are not strictly comparable with the fail-rate values reported for previous school years.
 - 12 Peter Cowley and Stephen Easton, *Boys, Girls, and Grades: Academic Gender Balance in British Columbia’s Secondary Schools* (Vancouver, BC: Fraser Institute, 1999): 7.
 - 13 In school years previous to 1999/2000, this indicator measured the difference between male and female students in a statistic that compared the students’ average school-derived and final examination marks. Thus, the raw values for the school year 1999/2000 are not strictly comparable with the gender gaps reported for previous school years.
 - 14 In this context, we have used the 90% confidence level to determine statistical significance.
 - 15 Census 1996 data for the custom geographies used in the development of the socio-economic measures were provided by Statistics Canada.



Detailed school results

Getting the most out of the tables

The tables provide a great deal of information, all of which is worth attention. As a general rule, we recommend that all the statistics presented be considered. No one number—indicator data, the overall rating, or provincial ranking—can provide as much information as the whole set. Parents choosing a school will have to decide which, if any, of the measures of academic achievement is important to them. Then, the data may form the basis of questions that parents ask of teachers and administrators at the school. Similarly, during the process of improvement planning, the school community may consider each number in the same way: Is it important to us? Do we want to improve this aspect of our school's performance? If so, how can improvement be accomplished?

Look at the table at the bottom of this page. Information on the school and its students appears in the first part of the table. Joliette is a public school at which English is the language of instruction. It enrolled 201 students in the school year 1999/2000. We include the enrolment number to

remind readers to exercise caution when considering the data for schools with relatively small enrollments. One would expect greater variation in the results of schools with smaller enrolments.

It is sometimes helpful to know something about the personal and family characteristics of the school's student body. They can be used to help identify other schools with similar student body characteristics with which to compare results. Characteristics of the student body can also be used to estimate the value added by the school. By estimating the extent to which student characteristics influence results, we can get a better picture of the effect that the school has on the success of its students. This year, the *Report Card* includes three measures of student characteristics. Of the students enrolled at Joliette in Secondary IV and Secondary V in 1999/2000, 4.6% are funded, special-needs students (EHDAA (%)). This proportion is only about one-half of the average for all schools in the *Report Card*. (The rating, EHDDA (%), shows the percentage of students at the school who have been assessed as having some kind of special need and for whom the school

Joliette High School							2000	1996-2000
Secteur public anglophone				Nombre d'élèves:	201	Rang provincial:	125 / 463	120 / 437
EHDAA (%):	4,6			En retard (%):	36,8	Rang régional:	8 / 25	8 / 19
Revenus des parents:	33 400 \$					Ajustement valeur ajoutée:	1,3	
Performance scolaire	1994	1995	1996	1997	1998	1999	2000	Tendances
Résultats aux épreuves (%)								—
Langue maternelle	73,9	69,8	65,1	69,9	72,9	69,5	71,7	
Langue seconde	82,4	80,5	80,6	82,3	83,4	80,9	83,2	
Histoire	64,7	71,3	67,2	73,6	75,7	80,5	69,7	
Sciences physiques	43,5	57,1	63,9	58,6	75,9	79,4	71,8	
Échec (%)	13,0	14,6	14,7	10,4	5,2	2,6	10,6	—
Surestimation par l'école (%)	3,1	1,3	1,8	2,1	0,2	0,4	2,1	—
Écart sexes (%): langue maternelle	nd	M 2,5	M 0,4	F 3,9	F 5,8	F 0,3	F 1,5	—
sciences physiques	nd	nd	F 14,0	nd	F 6,9	M 2,3	M 2,7	nd
Taux de promotion (%)	nd	nd	nd	nd	nd	nd	91,0	nd
Cote globale (sur 10)	6,4	6,5	5,9	6,5	7,0	8,5	7,2	—

receives additional funding from the Ministry of Education. Under normal circumstances only public schools are eligible for this additional funding. That is why, in most cases, the EHDAA value for private schools is zero.)

On the other hand, 36.8% of the school's Secondary IV students were sixteen or older at the beginning of the year. This proportion of late-entry students is substantially higher than the all-schools average of 25.7%. The average employment income of the parents of students at the school is estimated at \$33,400, well below the average for all the schools of \$45,000.

Student characteristics are taken into account in the *Adjustment for value added* indicator. At Joliette, the adjustment factor is 1.3. This value implies that if there were no differences among schools in their students' individual and family characteristics, the 1999/2000 *Overall rating out of 10* for Joliette would have been higher than its reported *Overall rating* of 7.2, by an amount equal to the adjustment factor of 1.3, or 8.5 out of 10.

Next in the tables are the indicators of school performance. Note that except for the *Overall rating out of 10*, all the results are expressed as a percentage. Where no results were produced or where small numbers of results were suppressed for privacy reasons, "nd" appears in the tables.

First, look at the statistics for the current school year 1999/2000 (labeled 2000). Referring to the table, Average for all schools, below, notice how the school's average examination marks compare to the all-schools average values. The examination results (*Résultats aux épreuves*) at Joliette exceed the all-schools average in second language and history but are lower than average in language of instruction and physical sciences. The school's examination failure rate (*Échec*) of 10.6% is three percentage points lower than average. These mixed results suggest that the school has potential to improve in those courses that lag behind the provincial average. The school was about average on the *School level grade inflation* (*Surestimation par l'école*) measurement. On the new *Promotion rate* (*Taux de*

promotion) indicator, Joliette enjoyed a rate of success substantially higher than average. This indicates that there is a high probability that students entering Secondary IV at the school will stay in school and get their general program diploma on time. Finally, at Joliette, the gender gap in language of instruction courses is very low relative to average, while in physical sciences it is somewhat higher. Again, mixed results suggest that, even though in some subject areas, the school is very successful, other results can be improved. The *Overall rating out of 10* (Joliette scored 7.2 in 1999/2000) takes into account the school's performance on all of the indicators discussed in this paragraph. The school's provincial academic ranking of 125th out of 463 (shown in the top right hand corner of the table) is based on this overall rating. The 2000 ranking is virtually the same as its average ranking for the period from 1996 to 2000. This indicates that the overall results at Joliette have been consistently strong over time. Directly below the provincial ranking is the school's rank in its district for the latest year and for the last five years. In general, the school is performing consistently well but its remarkable success in some areas suggests that improvement in the remaining areas is possible.

Now, what can we learn from the previous years statistics taken as a whole?

Trends were calculated for the average examination mark for all four courses combined, the failure rate, school level grade inflation indicator, the two gender gap indicators, and the *Overall rating out of 10*. Since only one year of *Promotion rate* data are available, trends for this indicator could not be calculated.

Improvement, if any, over the last six years for each indicator (except the *Promotion rate*) and the overall rating is noted with an upward pointing arrow (▲) in the last column of the row. A downward pointing arrow (▼) is used to note that the school is very likely experiencing deterioration in performance. The arrows are only used where a statistically significant trend is detected. In this

context, the term “statistically significant” means that, nine times out of 10, the trend that is noted is real, that is, it would not have happened just by chance. Because the trends are based on standardized scores rather than the raw data in the table, changes outside of the school’s control—like year-to-year variations in the difficulty of the examinations—have been taken into account. Where a dash appears, no significant change has occurred over the reported period. Where trends were not calculated due to lack of sufficient data, “nd” appears.

In the Joliette High School results table, the Trends indicator shows that, relative to other schools in the province, Joliette is holding its own over time. It is neither improving nor deteriorating.

Important note on interpreting the Trends indicator

In three instances—*Average exam marks*, *Promotion rate*, and *Overall rating out of 10*—an upward pointing arrow (▲) will accompany increasing values in the statistics. For example, increasing average mark values indicate improvement. For the other four indicators—*Fail rate*, *School level grade inflation*, and the two gender-gap indicators, an upward pointing arrow will accompany decreasing values in the statistics. For example, a decreasing rate of failure also indicates improvement.

Overall, the school community at Joliette should be pleased by the school’s steady, above-average performance over the last five years especially in light of the relatively challenging personal and family backgrounds of the students. However, the outstanding results in certain of the

indicators suggest that, by executing a well thought out plan for improvement, the school can do even better.

Important notes to the detailed tables

Note 1

Not all the province’s high schools are included in the tables or the ranking. Excluded are schools at which fewer than 15 students were enrolled in Secondary V. For privacy reasons, the Ministry of Education may suppress results generated by very small schools. Thus, there is often not sufficient data available to allow a complete analysis and presentation of the results for these schools.

Also excluded from the ratings and rankings are adult education centres; continuing education facilities; schools that cater largely to non-resident foreign students; schools for which insufficient data is available, and certain alternative schools.

The exclusion of a school from the *Report Card* should in no way be construed as a judgement of the school’s effectiveness.

Note 2

Where there were insufficient data available with which to calculate an indicator or where a school was not in operation during a specific year, “nd” appears in the tables.

Note 3

You can compare a school’s results with these average results for all the schools in the *Report Card* in table, Average for all schools, below

Average for all schools

	Nombre d'élèves: 787		En retard (%): 25,7		Ajustement valeur ajoutée: 0,0			
EHDAA (%):	8,9							
Revenus des parents:	45 000\$							
Performance scolaire	1994	1995	1996	1997	1998	1999	2000	Tendances
Résultats aux épreuves (%)								
Langue maternelle	72,0	71,4	72,9	75,3	68,6	74,7	75,4	—
Langue seconde	77,2	76,3	77,4	76,9	81,1	79,7	80,3	▲
Histoire	68,0	69,9	68,3	66,1	75,1	70,3	67,6	—
Sciences physiques	48,4	61,7	64,2	61,6	73,3	69,1	75,0	▲
Échec (%)	18,6	18,2	15,9	15,9	14,5	15,2	13,7	nd
Surestimation par l'école (%)	3,2	2,1	2,1	3,0	1,8	2,4	1,9	—
Écart sexes (%): Langue maternelle	F 1,6	F 1,7	F 1,9	F 1,9	F 1,8	F 2,0	F 4,7	nd
Sciences physiques	F 1,6	F 2,1	F 3,3	F 1,3	E 0,0	F 1,7	F 1,3	nd
Taux de promotion (%)	nd	nd	nd	nd	nd	nd	75,7	nd
Cote globale (sur 10)	6,3	6,3	6,3	6,3	6,3	6,2	6,2	—

Note 1: Because the data used to calculate the *Gender gap* indicators (*Écart sexes*) and the *Fail rate* indicator (*Échec*) for the year 2000 are different from those used in preceding years and because the trends in this table are not based on standardized scores, no trend can be determined for these indicators.

Note 2: Because they are based on aggregated standard scores, the values in this table for the *Overall rating out of 10* (*Cote globale sur 10*) will not change appreciably over time. Where necessary, trends indicated in this table are based on the indicator values, not standardized scores.

Where to find the detailed results tables

The tables showing the detailed results for the schools will be found on pages 21 to 147 of the French version of this study: *Bulletin des écoles secondaires du Québec : Édition 2001*.



Ranking the schools

Important notes to the rankings

In this table, schools are ranked (on the left hand side of the page) in descending order (from 1 to 462) according to their academic performance as measured by the *Overall rating out of 10* (shown on the right hand side of the table) for the school year 1999/2000. Each school's average ranking over the last five years and average *Overall rating out of 10* over the last five years are also listed. The higher the *Overall rating out of 10*, the higher the rank awarded to the school. Where schools tied in the *Overall rating*, they were awarded the same rank. Where insufficient data were available to calculate a rating, "nd" appears in the table.

Not all the province's high schools are included in the tables or the ranking. Excluded are

schools at which fewer than 15 students were enrolled in Secondary V. For privacy reasons, the Ministry of Education may suppress results generated by very small schools. Thus, there is often not sufficient data available to allow a complete analysis and presentation of the results for these schools.

Also excluded from the ratings and rankings are centres for adult education; continuing education programs; schools that cater largely to non-resident foreign students; and certain alternative schools that do not offer a full high school program.

The exclusion of a school from the *Report Card* should in no way be construed as a judgement of the school's effectiveness.

Where to find the ranking table

The table showing the ranking of the schools will be found on pages 150 to 166 of the French version of this study: *Bulletin des écoles secondaires du Québec : Édition 2001*.



Appendix 1: Calculating the Overall rating out of 10

The *Overall rating out of 10* is intended to answer the question, “In general, how is the school doing, academically?” In order to answer this question a number of aggregations of a variety of data sets, many with dissimilar distributions, must be accomplished. Further, since the *Overall rating out of 10* is a key indicator of improvement over time, the method of its derivation must take into account that even the annual values within a given data set may not share statistical characteristics. For example, the mean and standard deviation of the distribution of average examination marks across schools in language of instruction studies may vary between English and French and within either subject from year to year. Thus, the need for aggregation of dissimilar data and for year-over-year comparability of data within data sets dictated the use of standardized data for the calculation of the *Overall rating out of 10*.

The following is a simplified description of the procedure used to convert each year’s raw indicator data provided by the Ministry of Education into the *Overall rating out of 10* contained in the detailed tables.

- 1 Results in the English and French versions of Secondary IV level History were aggregated to produce a weighted average examination mark, fail rate, and school level grade inflation rate without standardizing. We did not standardize prior to weight averaging because we have no reason to believe that the French and English versions of the same examination are dissimilar. The two versions of Secondary IV level Physical Science were aggregated in the same way. In both cases, student enrollment proportions were used as the weighting factor.
- 2 All the results were then standardized by solving the equation $Z = (X - \mu) / \sigma$ where X is the individual school’s mean result; μ is the mean of the all-schools distribution of results and σ is the standard deviation of the same all-schools distribution.
- 3 Since the Secondary V level French as a second Language and Secondary V level English as second language courses each have several distinct components that are separately examined, for each course the results for these components were aggregated to produce weighted average indicator results for the course. The weighted average results for each of the two courses were then re-standardized.
- 4 All the aggregated standardized results as well as the two language of instruction results (these two distinct data sets did not need to be aggregated prior to the calculation of the overall results) were then aggregated to produce overall weighted average examination mark, fail rate, school level grade inflation, Language of instruction gender gap and Physical science gender gap indicators. These weighted average overall results were again re-standardized.
- 5 The six overall results (for years previous to 1999/2000, the *Promotion rate* indicator was not

used to calculate the *Overall rating out of 10**) were then combined to produce a weighted average summary standardized score for the school. The weightings used in these calculations were as follows: Examination marks—40%, Fail rate—20%, School level grade inflation—10%, combined gender gap indicators—10%, and Promotion rate—20%. Where only one gender gap indicator could be calculated, it received a 10% weight. Where no gender gap indicator could be calculated, the weightings used were as follows: Examination marks—50%, Fail rate—20%, School level grade inflation—10%, and Promotion rate—20%.

- 6 This summary standardized score was standardized.

This standardized score was converted into an overall rating between zero and 10 as follows:

- 7 The maximum and minimum standardized scores were set at 2.0 and -3.29 respectively. Scores equal to, or greater than, 2.0 will receive the maximum overall rating of 10. This cut-off was chosen because the occasional, although infrequent, occurrence of scores above 2.0 (two standard deviations above the mean) allows the possibility that more than one school in a given year can be awarded a "10 out of 10." Scores equal to, or less than, -3.29 will receive the minimum overall rating of 0. Schools with

scores below -3.29 are likely outliers—a statistical term used to denote members of a population that appear to have characteristics substantially different from the rest of the population. We therefore chose to set the minimum score so as to disregard such extreme differences.

- 8 The resulting standardized scores were converted into overall ratings according to the formula: $OR = \mu + (\sigma * StanScore)$, where OR is the resulting Overall rating; μ is the average calculated according to the formula $\mu = (OR_{min} - 10 (Z_{min} / Z_{max})) / (1 - (Z_{min} / Z_{max}))$; $\sigma = (10 - \mu) / Z_{max}$; and StanScore is the standardized score calculated in (5) above and adjusted as required for minimum and maximum values as noted in (7) above. As noted in (6) above, OR_{min} equals zero. As noted in (7) above, Z_{min} equals -3.29; and Z_{max} equals 2.0.
- 9 Finally, the derived Overall rating is rounded to one place of the decimal to reflect the significant number of places of the decimal in the original raw data.

Note that the *Overall rating out of 10*, based as it is on standardized scores, is a relative rating. That is, in order for a school to show improvement in its overall rating, it must improve more than the average. If it improves, but at a rate less than the average, it will show a decline in its rating.

* The weightings used in these calculations for the school years previous to 1999/2000 were: Examination marks—50%, Fail rate—30%, School level grade inflation—10%, and combined gender gap indicators—10%.



Appendix 2: Why do schools differ in their *Overall ratings*?

The effectiveness of a school probably depends on a variety of factors including the leadership and management skills of the administrators; the expertise and enthusiasm of the teachers and counselors; the physical, financial, and technological resources at the school's disposal, the regulations under which the school operates, and the quality of its curriculum. But since the characteristics of the student body—both individual and family—are not the same from school to school, other factors will likely affect each school's *Overall rating out of 10*. The abilities, aptitudes, and motivations of its students, the enthusiasm of the parents for education, and the degree to which they participate in their children's school life will also have a role to play. While the currently available data does not allow us to quantify the contribution of all such variables, with each new edition of the *Report Card* we will continue to improve our estimate of the contribution—or value added—that each of Quebec's secondary schools makes to their students' academic success.

In order to determine the school's contribution, we first compiled a variety of statistics for all of the schools. We determined average student family characteristics using by-postal-code enrollment data and 1996 Census statistics; the proportion of special-needs and late-entry students at the school; and, two school characteristics—sector membership (private or public) and the size of the student enrollment at the school. We analyzed the relationship between these factors and the *Overall rating out of 10*. We then looked more closely at the relationship of these

factors and the indicators that make up the *Overall rating out of 10*. Finally, we re-examined the apparent affect of school enrollment size on the indicators and the overall rating.

The effect of school and non-school factors on the *Overall rating out of 10*

A standard multiple regression was carried out with the *Overall rating out of 10* as the dependent variable and four independent variables—average parental employment income; the proportion of late-entry students in the Secondary IV class; school-enrollment size; and school-sector membership. We noted that average parental employment income is strongly correlated with average number of years of education of the most educated parent. While the following analysis uses the former, a similar explanatory model can be built with the latter. The four independent variables are referred to hereafter as INCOME, LATE, NUMBER OF STUDENTS, and SECTOR.

The analysis was carried out using SPSS, version 10.0.0—a statistical software package. After preliminary work, we ran the regression using the natural logs of INCOME and NUMBER OF STUDENTS to reduce dissymmetry and to improve normality, linearity, and the homoscedasticity of the residual variances. The analysis was based on a sample of 462 schools.

Table 1 shows the correlation between the variables, the unstandardized coefficients of regression (B), the standardized coefficients of regression (β), the partial correlations (sr^2), R^2 and adjusted R^2 .

At first glance (see Column 2 of the table), LATE exhibits the highest correlation ($r = 0.693$) with the *Overall rating out of 10*, followed by SECTOR ($r = 0.541$), INCOME ($r = 0.416$) and NUMBER OF STUDENTS ($r = 0.146$). However, when multiple regression is used to more carefully analyze the relationship between the variables, the relative importance of the four variables is found to be somewhat different.

First, note that the regression results (column 6) indicate a statistically significant association between each of the four independent variables and the *Overall rating out of 10*. The standardized re-

gression coefficients (β) in column 7 indicate the relative influence of each of the independent variables on the Overall rating. Note that their order of importance now appears to be LATE, SECTOR, NUMBER OF STUDENTS, and INCOME. Lastly, sr^2 indicates the unique contribution to R^2 of each variable when it is considered as a part of the multivariate model. The order of importance reflected by the sr^2 correlations is the same as that indicated by the standardized coefficients β .

These four independent variables explain 60% of the variation in the Overall rating among schools. This is a substantial improvement over

Table 1: Standard multiple regression of the socio-economic, student characteristics, and school organizational variables on the Overall rating out of 10 for June 2000

Variables	OVERALL RATING	Ln INCOME	LATE	Ln NUMBER OF STUDENTS	B	β	sr^2
Ln INCOME	0,416				0,474*	0,076	0,004
LATE	-0,693	-0,401			-5,069**	-0,486	0,169
Ln NUMBER OF STUDENTS	0,146	-0,031	-0,090		0,497**	0,213	0,039
SECTOR	0,541	0,414	-0,430	-0,297	1,529**	0,364	0,085
				Intersept	-2,67		
Mean	6.22	10,67	0,255	6,41			$R^2 = 0,60^a$
Standard deviation	1,88	0,30	0,18	0,81			Adj. $R^2 = 0,59$
N = 462							$R = 0,77^{**}$

** $p < 0,01$; * $p < 0,05$; ^aUnique variance = 0,297 ; Common variance = 0,299

Legend of variables

Ln INCOME : natural log of average parental employment income.

LATE : the proportion of students who enrolled in Secondary IV in September of 1999 and were 16 or older divided by the total number of enrolling Secondary IV students.

Ln NUMBER OF STUDENTS : natural log of the school's student enrollment.

SECTOR : Public or private school

last year's model (R^2 equals 0.39) especially considering that the number of independent variables has been reduced from seven to just four.

The use of the LATE variable is the principal cause of the improvement of the model. By adding a component that seems to address a variety of student characteristics, the model gains significantly in explanatory value. A comparison of this year's regression results with those of last year, suggests that LATE absorbs a good deal of the explanatory power of the income variable. Indeed, the LATE variable may be viewed as the effect of the accumulated history of the students in that it is likely to be influenced by the innate characteristics of the pupils, the socio-economic characteristics of their families, the effect of the schools attended by the students prior to enrollment in Secondary IV, and the students general intellectual, social, and personal development from birth through to enrollment in Secondary IV.

Of course, the strength of LATE makes it difficult to distinguish between socio-economic effects and the effects of individual student characteristics. However, the INCOME variable remains statistically significant even when LATE is controlled for. This suggests that the socio-economic characteristics of student families have a continuing effect during the last two years of secondary school.

The statistical significance of the NUMBER OF STUDENTS variable indicates that the size of the school plays a role in the explanation of variances in Overall rating (see details below).

Lastly, differences in SECTOR—public or private ownership—explain 8.5% of the variation in the Overall rating among schools when school enrollment size and non-school variables are taken into account. This estimate is certainly more precise than that of last year. In addition, as regards school years previous to Secondary IV, the introduction of the LATE variable will, to some degree, control for the effect of student selection by private schools and the non-selective nature of most public school admissions as well as for the effect of self-selection of schools by students and parents.

Can the results on individual indicators also be explained by these variables?

The *Overall rating out of 10* is a composite index calculated using values for six indicators. Do the same factors explaining the Overall rating also explain the results for average examination marks, fail rate, school-level grade inflation, and promotion rate? A thorough analysis of these relationships is essential to a better understanding of the Overall rating. Table 2 summarizes the results of a standard regression on four of these indicators.

Table 2: Standard multiple regression of school and non-school variables on the average exam marks, fail rate, school level grade inflation, and promotion rate for June 2000

Dependent variables	AVERAGE EXAM MARKS		FAIL RATE		SCHOOL LEVEL GRADE INFLATION		PROMOTION RATE	
	B	sr ²	B	sr ²	B	Sr ²	B	sr ²
Independent variables								
Ln INCOME	0,29*	0,006	0,19		0,19		0,08	
LATE	-2,59**	0,15	-2,55**	0,15	-0,75**	0,013	-3,44**	0,27
Ln NUMBER OF STUDENTS	0,21**	0,02	0,28**	0,04	0,34**	0,07	0,07	
SECTOR	0,77**	0,08	0,66**	0,06	0,44		0,73**	0,07
N	462		462		462		462	
R²	0,55		0,48		0,15		0,68	

** p < 0,01 ; * p < 0,05

As the average examination marks contribute heavily (40% weighting) to the *Overall rating out of 10*, it is not surprising that similar results— $R^2 = 0.55$ and $sr^2 = 0.26$ —are achieved when the independent variables are regressed on average examination marks rather than the Overall rating.

The same is true when the fail rate is substituted as the dependent variable. Income, on the other hand, does not demonstrate a significant association with *Fail rate*.

Only LATE and SECTOR are significantly associated with *Promotion rate* ($R^2 = 0.68$).

Because of the truncated nature of the distribution of *School level grade inflation* (less than half of the schools show evidence of grade inflation), this regression model proves ineffective in explaining the dependent variable.

Thus, we can conclude that three of the four indicators composing the Overall rating are affected by the independent variables in the model in more or less similar ways.

Does the size of schools make a difference?

The results in table 2 suggest that the size of the school's enrollment is positively associated with academic performance: that is, the larger the

school, the better its performance on the *Report Card's* indicators. The association is true for average examination marks, fail rate, and school-level grade inflation. It is not the case for the promotion rate. Why would larger schools systematically produce better results? Why is the promotion rate different in this regard?

Table 3 reports the results of a regression on the average exam marks and promotion rates for both public and private schools of the previously used independent variables with the exception, of course, of SECTOR.

Since school size is apparently associated with average exam marks when the regression sample includes all schools, a similar association might be expected when the regression is run separately on private and public schools. Table 3 shows that this is, in fact, the case. However, for private schools, the regression coefficient B is twice the size of the corresponding public-school statistic. Further, the promotion rate at public schools seems not to be associated with school size, while in private schools there is a significant relationship.

While school size is seemingly more closely related to school performance in the private sector than in the public sector, further study is required to confirm this result.

Table 3: Standard multiple regression of school and non-school independent variables on average exam marks and promotion rate for both public and private schools

Variables indépendantes	PUBLIC SCHOOLS				PRIVATE SCHOOLS			
	Average exam marks		Promotion rate		Average exam marks		Promotion rate	
	B	Sr ²	B	sr ²	B	sr ²	B	sr ²
Ln INCOME	0,17		0,07		0,55*	0,02	0,18	
LATE	-2,17**	0,21	-3,52**	0,46	-4,33**	0,24	-2,77**	
Ln NUMBER OF STUDENTS	0,16**	0,02	0,01		0,31**	0,03	0,29**	0,06
N	335		335		127		127	
R ²	0,31		0,53		0,58		0,53	

** p < 0,01 ; * p < 0,05



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Peter Cowley is the Director of School Performance Studies at The Fraser Institute. Upon graduation from the University of British Columbia (B.Comm. 1974), Mr Cowley accepted a marketing post with Proctor and Gamble in Toronto. He later returned to Vancouver to begin a long career in marketing and general management in the furniture-manufacturing sector. During his assignments in general management, process improvement was a special focus and interest. In 1994, Mr Cowley wrote and published *The Parent's Guide*, a popular handbook for parents of British Columbia's secondary-school students. The Parent's Guide web site replaced the handbook in 1995. In 1998, Mr Cowley was co-author of The Fraser Institute's *A Secondary Schools Report Card for British Columbia*—the first of the Institute's continuing series of annual reports on school performance. This was followed in 1999 by *The 1999 Report Card on British Columbia's Secondary Schools, Boys, Girls, and Grades: Academic Gender Balance in British Columbia's Secondary Schools*, and *The 1999 Report Card on Alberta's High Schools*. In 2000, he was co-author of new editions of the *Report Cards for Alberta and British Columbia* and of the first edition of the *Bulletin des écoles secondaires du Québec : Édition 2000 / Report Card on Quebec's Secondary Schools: 2000 Edition*. This year, Mr. Cowley has co-authored *Report Cards for British Columbia, Ontario, Alberta, and Quebec*. He continues his research on education and related issues for The Fraser Institute.

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