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Report Card on Quebec's Secondary Schools

2002 Edition

Richard Marceau and Peter Cowley
with Sylvain Bernier

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Introduction

In September, François Legault, Quebec's current Minister of Health and past Minister of Education, announced the introduction of report cards on hospitals. In doing so, he provided evidence that the government of Quebec is willing to increase accountability in the public sector. Minister Legault produced a concrete example of the kind of reporting envisaged by the Public Administration Act.¹ Certainly, we would agree with M. Legault that the public has the right to know whether or not public sector services are effective. Possession of this information allows private individuals to make more rationale choices among service providers. Such information also enables citizens to exert the necessary pressure on politicians to improve services. While the hospital report cards were generally greeted with support, criticisms of the methodology were common.²

It is remarkable to note that just two years ago, the reaction to the introduction of the *Report Card on Quebec's Secondary Schools* was just the opposite. Although supported by some commentators, the education sector reacted negatively, questioning the very relevance of the initiative, rather than dwelling on the details of the methodology. Of course, the *Report Card* had a different genesis. Produced by independent, non-governmental organizations, the *Report Card* could be entirely objective and did not need the prior approval of the education establishment. For that reason, perhaps, the establishment in large part reacted with surprise and indignation to this new expression of accountability in the education sector. Parents, on the other hand, calmly welcomed the *Report Card* as a new source of useful information and began to use it as such immediately.

Obviously, the climate for the regular publication of information on the quality of public services has changed in two years. Indeed, we may soon see

report cards on performance in other sectors of the public service. More information will mean better decisions on the part of the public and improved service across the public sector. Of course, broader acceptance of such report cards will lead to further scrutiny of their methodology that will, in turn, result in even better reports.

When we began the production of the *Report Card*, we anticipated and welcomed such scrutiny. Wherever possible we used the comments and criticisms that were offered as the basis for further refinement. We continue to do so.

Some schools do better than others

The *Report Card* demonstrates clearly 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.

An estimate of the impact the school makes on its students—the school's "value added"—should be of particular interest to school administrators and teachers. Many of them have long believed that student performance is largely dependent upon factors over which their schools have no control. The *Value added* indicator, introduced this year, gives these administrators cause for hope. It demonstrates that some schools make a substantial contribution to

their students' success. If these schools can do so, why not others? Undoubtedly, those responsible for the schools that receive relatively low *Value added* scores will be interested to determine what measures the more successful schools have taken to ensure that all their students succeed.

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 each 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 among 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. Thus, our work has benefited greatly from the co-operation received from the Ministry of Education.

From these data, for each school, for the seven school years 1994/1995 through 2000/2001, we calculated six indicators of school performance.

- (1) the average uniform examination⁵ mark received by the school's students on five 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 uniform examination mark in these five 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) a measure of the extent to which each school encourages and assists its students to stay

in school and finish their chosen secondary school program.

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?"

This edition of the *Report Card* also provides useful contextual indicators for each school. They are:

- (1) the proportion of the students at the school who are ministry-funded special needs students,
- (2) the proportion of students beginning Secondary IV who are older than normal,
- (3) a measure of the parental employment income,
- (4) the number of students enrolled at the school,
- (5) the affiliation—private or public—of the school, and
- (6) the language of instruction—French or English—used at the school.

It is these contextual measures that enable us to produce the new *Value added* indicator.

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 helps 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 improv-

ing 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

The vast majority of Quebec's students attend schools that are wholly or partly financed by taxpayers. In total, for the school year 2000/2001, Québec's taxpayers spent \$8.6 billion on public and private elementary and secondary education. 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?

A measure of value added by the school

As noted above, for the first time, the *Report Card* rates each school on the extent to which it directly contributes to the academic performance of its students. It is reasonable to conclude that a student's success in school is the result of a number of factors. If he is intellectually capable, curious, and hard working, he will likely be more successful. Family characteristics can also play a role. If the student's parents value education, encourage him to take his studies seriously, and involve themselves in the activities of the school, the child will likely benefit. Finally, it is clear that schools can also affect student results. By identifying those schools that are having the greatest positive impact on their students, lessons may be learned that can be applied by those schools that are not so successful.

The *Perseverance rate* indicator

Last year, we introduced the *Promotion rate* indicator. This two-part indicator reported the extent to which each school ensured that (a) its students remained in school and (b) they completed their diploma program on time. Unfortunately, the Ministry of Education was unable to provide sufficient data to allow us to calculate the same indicator for this edition. As a result we have replaced the promotion rate with the *Perseverance rate* (in the tables, *taux de persévérance*). This new indicator reports the proportion of each school's Secondary IV and Secondary V students who either receive their diploma or program completion certificate by the end of the school year or return to school in the following school year.

While the *Perseverance rate* is a useful measure of the school's ability to keep students in school, we hope that in future we will be able to report the *Promotion rate*. Its several aspects make it a more useful indicator of school performance.

Mathematics examination results

With the institution of an annual uniform examination in Mathematics at the Secondary IV level, the *Report Card* can now include results in all of the key subject areas—language arts, mathematics, the sciences, and the humanities thereby providing a more complete picture of school performance.

Notes

- 1 Digital document:
<http://www.canlii.org/qc/sta/a6.01/whole.html>
- 2 A. Pratt, *La Presse* (September 18, 2002) and B. Breton, *Le Soleil*, (September 18, 2002).
- 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, 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; Mathematics, 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 prerequisites for important post-secondary courses.



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?

In large part, we base our overall rating of each school's academic performance on the students' results in five core academic courses. They are Secondary V level courses in the language of instruction and second languages and Secondary IV level courses in History of Quebec and Canada, Physical Sciences, and Mathematics. The results used as indicators are:

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

The first five indicators demonstrate the effectiveness of the school's efforts by measuring the extent to which it equips all its students with the knowledge and skills embodied in the curricula. The sixth indicator is an efficiency measure in that it demonstrates the extent to which the school is successful in keeping its students on task and devoted to the completion of their chosen secondary school program.

We have selected this set of indicators because they provide systematic insight into a school's performance.¹ 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, for each year, under the heading *Résultats aux épreuves*, the table lists the average raw uniform examination mark achieved by its students at the June examination sitting in each of the five core courses. For the purposes of the calculation of the *Overall rating out of 10*, the average marks for all five courses are combined to produce an overall average mark.

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 Perseverance 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 *Perseverance rate* (noted in the tables as *Taux de persévérance*)—that 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 *Perseverance 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 the experience of both the Secondary IV and Secondary V classes at the 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, at the minimum, schools should encourage and assist students to finish a program of secondary-school study. This indicator was calculated as follows. First, we calculated the proportion of the school's Secondary IV students who received their general program diploma or other certificate at the end of the school year or returned in the following year to enroll in the general, professional, or adult programs. Then, we multiplied the result by the proportion of the school's Secondary V students who either received their diploma or other certificate at the end of the school year or returned in the following year to enroll in the general, professional, or adult programs.

Note that this indicator is not 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.² Using a real student cohort (that, for example, of students who began Secondary IV in September of 1999 and were scheduled to receive their diplomas in June of 2001) would not measure the effectiveness of the individual school but that of the school system because the available data reports student transitions within the provincial 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' perseverance? The "instant cohort" measures the effectiveness of the individual school.

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 *Perseverance 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.³

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 five 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 uniform 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 five 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 Mathematics and Physical Science courses are 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 suc-

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.⁴

2 The Gender Gap indicators

In a study of gender differences in the academic results of British Columbian students, it was found that “there appears to be no compelling evidence that girls and boys should, given effective teaching and counselling, experience differential rates of success.”⁵ 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 results for the school year 2000/2001 reported in this *Report Card* show that at 93% of the schools female students did better than male students on the Secondary V examinations in Language of instruction. On the other hand, at 68% of the schools, male students outscored their female classmates in the Secondary IV physical science examinations.

The indicators—Gender gap: language of instruction (in the tables, *Écarte sexes: langue maternelle*) and Gender gap: physical sciences (in the tables, *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.⁶

Schools with a low gender gap are more successful than 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 average exam marks for each of the five courses were first combined and then re-standardized to produce a standardized overall average uniform final examination mark.

The standardized scores were then weighted and combined to produce an overall standardized score. Note that for 2000/2001, the *Perseverance rate* replaced last year’s *Promotion rate* in the calculation of the *Overall rating out of 10*. Finally, this overall standardized score was converted into a score out of 10. (Explanatory notes on the calculation of the *Overall rating out of 10* are contained in Appendix 1.)

The *Overall rating out of 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.

Is the school improving academically? The Trends indicator

For all but the *Perseverance 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 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 in the performance indicators more easily, we developed a trends indicator. It uses regression analysis to identify those dimensions in which the standardized scores achieved by the school show a statistically significant change.⁷ In such 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 five years of data are available.

Notes

- 1 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.
- 2 It would have been useful to know the proportion of pupils progressing without delay through all five years of secondary school. 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 perseverance rates to compare all the schools in the *Report Card*. In any event, it is probable that drop-out rates are highest after most of the students have reached the age of 16 years, after which school attendance is not mandatory.
- 3 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.
- 4 Note that prior to 2000, the overall course failure rate was used in the calculation of this indicator. Subsequently, the failure rate on the uniform examinations was used. Thus, the indicator values for 2000 and 2001 cannot be directly compared with previous years' indicator values.
- 5 Peter Cowley and Stephen Easton, *Boys, Girls, and Grades: Academic Gender Balance in British Columbia's Secondary Schools* (Vancouver, BC: Fraser Institute, 1999): 7.
- 6 Where both English and French language of instruction examinations were written at the school, the gender gap was calculated based on the results for the course in which the largest number of students were enrolled. The gender gap for physical sciences was calculated using all the results at the school, regardless of the language in which the course was taught.
- 7 In this context, we have used the 90% confidence level to determine statistical significance.



To what extent do school factors affect the *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. But, are all schools equally effective in enabling all students to succeed?

Three broad groups of factors—individual student characteristics, family or socio-economic characteristics, and school-related factors—are thought to play a part in the performance of students at school. To determine the impact of the school on its students, we must first remove the effect of student and family characteristics from the *Overall rating out of 10*. The remainder will be the school effect or “value added” by the school. With this new information, we will be able to identify those schools that appear to be making a greater contribution than others to their students’ success.

The calculation of the *Value added* indicator (in the tables *Valeur ajoutée*) first requires that we assemble significant indicators of both non-school and school factors. In order to provide readers with more information about the school and its student body, the *Report Card* includes the following six contextual indicators, of which all but *EHDAA* are used in the calculation of the value added by the school.

- (1) *EHDAA*¹ indicates the proportion of Secondary IV and Secondary V students at the school with learning disabilities or other handicaps. 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.²
- (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. To a certain degree, this indicator also allows us to isolate the effect of selective enrollments by some private and public schools.
- (3) *Average parents’ employment income* (noted in the tables as *Revenu des parents*) indicates the average parental income from employment earned 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) The total student enrollment (*Nombre d’élèves*) at the school.
- (5) The affiliation of the school, whether private or public. This is shown in the tables with indicator 6 (below) as part of the indicator *Secteur*.
- (6) The language of instruction at the school, whether French or English.

In order to construct a model of value added by the school, we first used by-postal-code enrollment data provided by the Ministry of Education and socio-economic data derived from the 1996 Census³ to establish a profile of the student body’s family char-

acteristics for each of the schools in the *Report Card*. We then used multiple regression—a commonly used statistical analytical procedure—to determine the nature of the relationship between these factors and the variations in school performance as measured by the *Overall rating out of 10*.⁴ We added to this profile the average values for student characteristics (*EHDAA* and *Late entry*) and certain school characteristics (*student enrollment*, *school affiliation*, and *language of instruction*).

The association of student, family, and school factors with the Overall rating out of 10

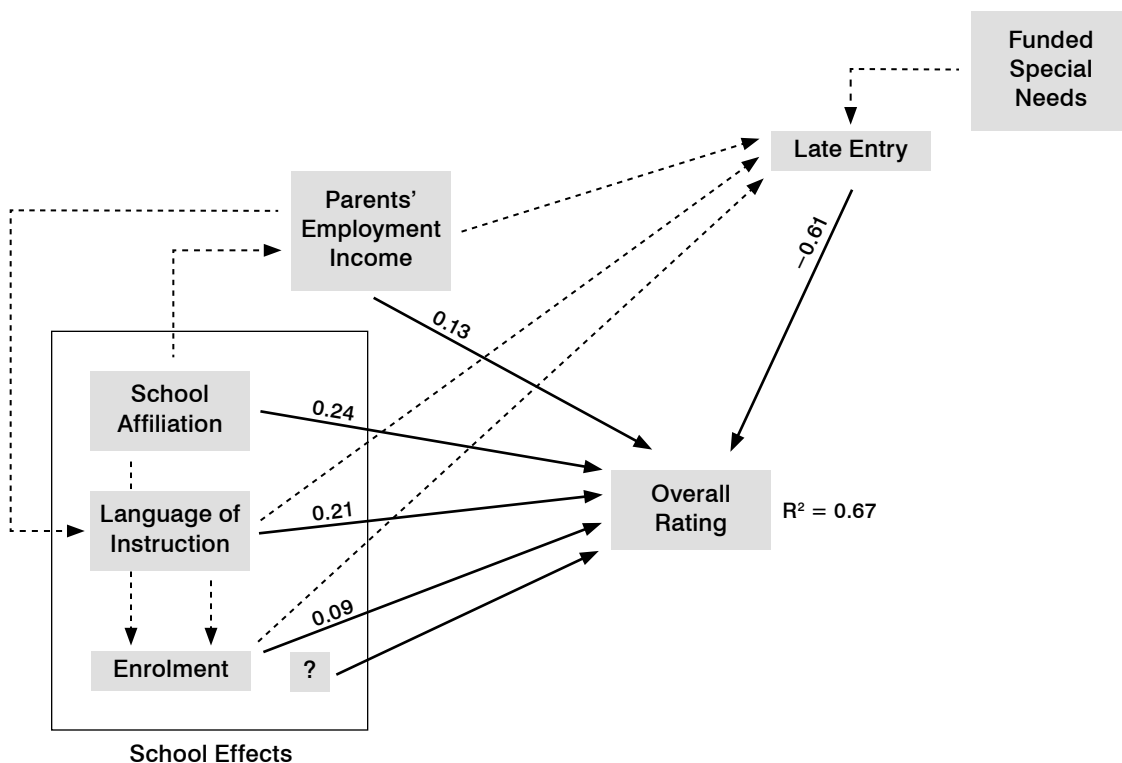
A structural equation model, described in figure 1, was developed using the values for the student, family, and school characteristics noted above for 431 schools. The value accompanying each bold arrow describes the degree of the relationship between the independent variable and the *Overall*

rating. Possible values range from 0.0 indicating no relationship to 1.0 indicating a perfect relationship. A more detailed examination of the results of the analysis is presented in Appendix 2.

The student variable, *Late entry*, demonstrates the closest association with the *Overall rating*, followed by *school affiliation* and *language of instruction*. *Average parental employment income* and *total student enrollment* show less association in this model. Finally, the box in figure 1 enclosing a question mark reminds us that they are likely a number of school-related factors—effectiveness of school leadership, teaching, and counseling, for instance—for which we do not have comparative data but that may be associated with the unexplained variation in the schools' overall rating.

The dashed arrows indicate possible indirect causal relationships. For example, in addition to its direct effect on the *Overall rating*, *average parental employment income* may indirectly affect the *Overall rating* through its association with school choice. Higher parental income affords families a greater

Figure 1: Factors that influence the Overall rating out of 10



opportunity to select private schools that require payment of large tuition fees. Since private school affiliation has a direct positive relationship with the *Overall rating* independent of parental income, it is apparent that income has both a direct and an indirect effect on the *Overall rating*.

Estimating the value added by the school

Estimating the value added by the school is a two-part process. First, we confirm the association of a variety of factors with the *Overall rating out of 10* using the procedure described above. Then, from the linear equation that predicts the *Overall rating* based on the independent variables included in the model, we remove all the non-school factors. We thereby isolate the effect of the school.

Note that the residual, unexplained variance is assigned to the school. We do this for two reasons. First, our preliminary analysis of a wide range of socio-economic factors indicated that their combined effect was adequately approximated by average parental employment income alone. Second, as mentioned above, it is quite likely that many more school factors than those included in the model play an important role in the overall rating. Regrettably, we have not yet discovered any objective data that might capture the effect of such variables as strong school leadership or the establishment of high expectations at the school.

The product of this isolating procedure is a new rating for each school free of the influence of non-school factors. The schools were sorted based on this new rating and were assigned to quartiles based on the relative strength of this measure of school effect. Schools in the quartile with the highest school effect values were assigned a score of A while the schools in the other three quartiles were assigned B, C, and D. The schools assigned a D are judged according to the model as having the least effect on the outcome of their students.

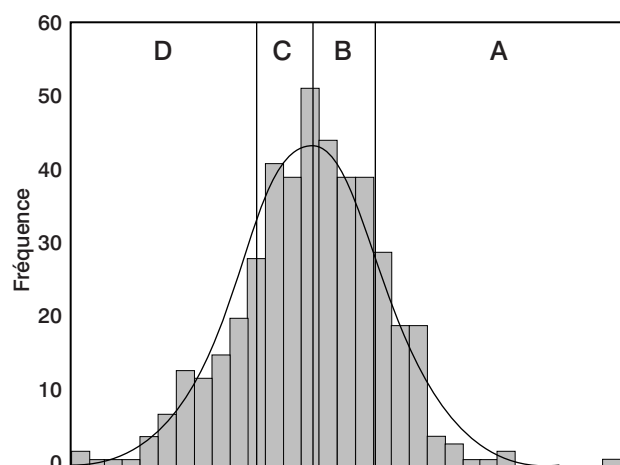
We adopted a letter grade for this *Value added* indicator rather than a numerical score to reflect the fact that our model can only estimate the effect of the school. Unlike the *Overall rating out of ten*, which

is based on a combination of actual objective results, the *Value added* is the result of an imperfect model. While, we believe that it quite accurately identifies the relative extent to which schools are having an effect on their students' results, it is unlikely that the model can as yet be used to make fine distinctions between pairs of schools. Thus, until the model is significantly improved, we will assign only broad indicators of the *Value added* to each school.

Note the characteristics of the distribution of the *Value added* measure in figure 2. This relatively normal distribution features a clustering of the B and C schools close to the average value. On the other hand, the A and D schools are spread over a considerably larger range of values. Given that the *Value added* is only an estimate, we should consider that only the A and D schools are of particular note. That is, the A schools are very likely above average in their effect on student results while the D schools are very likely below average. It is less likely that any distinctions can be made between the schools in the B and C quartiles other than to say that they are more or less average in terms of their effect on student results.

It is also important to recognize that the *Value added* indicator reflects just one year's result. We know that the *Overall rating out of 10* can vary from year to year as the result of chance factors unrelated to the model described above. As this is the case, we

Figure 2: Distribution of value-added scores for 431 schools (2000/2001)



would expect similar variation in the *Value added* from year to year. Over time, however, we will be able to identify schools that routinely have a positive effect on their students' success.

School officials may be able to use the *Value added* indicator to identify schools that have had a relatively greater positive effect on their students. Thus identified, these schools can be used to establish norms of best practice that could be adopted by less successful schools to the benefit of their students.

Notes

- 1 "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 behavioural disadvantages and the public schools that they attend receive additional funds for use in the EHDAA students' education.
- 2 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.
- 3 Census 1996 data for the custom geographies used in the development of the socio-economic measures were provided by Statistics Canada.
- 4 Several socio-economic indicators—including average age of the parents, average number of years of education of the parents, parental employment income, and government transfer income—are strongly correlated with the *Overall rating*. However, by using parental employment income as the sole indicator of family characteristics in the analysis, we considerably simplified the interpretation of the results without sacrificing accuracy.



Detailed school results

How to interpret the results

Use the sample table and the explanation of each line below to help you interpret the individual school report cards. In order to get the most complete picture of a school's results, readers should take into account all of the indicator values, ratings, and rankings.

Families choosing a school for their students should seek to confirm the Report Card's findings by visiting the school and interviewing teachers, school administrators, and other parents. And, of course, a sound academic program should be complemented by effective programs in areas of school activity not measured by the *Report Card*.

1: The name of the administrative area in which the school is located. This appears only above the first school listed in the administrative area.

2: The name of the school.

3 Left: The schools affiliation (public or private) and language of instruction (French or English).

1 RÉGION ADMINISTRATIVE: ABITIBI-TÉMISCAMINGUE									
2 ÉCOLE D'IBERVILLE									
3	Secteur public francophone		2001		1997-2001				
4	Nombre d'élèves: 1 569		Rang provincial: 175 / 464		155 / 422				
5	Revenus des parents: 46 900 \$		Rang régional: 1 / 10		2 / 10				
6	En retard (%): 30,9		EHDAA (%): 3,9		Valeur ajoutée: B				
Performance scolaire									
7	Résultats aux épreuves	1995 (%)	1996 (%)	1997 (%)	1998 (%)	1999 (%)	2000 (%)	2001 (%)	▲▼
8	Langue maternelle	72,2	71,6	75,2	68,9	75,2	74,9	76,8	–
9	Langue seconde	76,6	76,1	73,6	79,5	78,4	77,6	75,0	▼
10	Histoire	72,4	67,1	64,5	74,4	69,9	67,9	68,3	–
11	Sciences physiques	70,9	74,8	68,9	74,9	72,5	78,8	75,5	–
12	Mathématiques	nd	nd	nd	nd	nd	nd	68,7	nd
13	Échec	13,0	12,9	14,9	12,7	11,7	9,7	12,0	▲
14	Surestimation par l'école	0,0	1,3	2,1	0,0	0,4	0,6	0,3	▲
15	Écart sexes: Langue mat.	F 1,6	F 4,0	F 3,2	F 3,0	F 2,7	F 4,4	F 5,1	–
16	Sciences phy.	M 1,1	M 3,6	F 1,3	F 1,9	M 0,2	F 2,5	F 1,8	–
17	Taux de persévérance	nd	nd	nd	nd	nd	nd	90,7	nd
18	Cote globale (sur 10)	7,5	6,6	6,5	6,5	6,8	6,3	6,7	–

4 Left: The number of students enrolled at the school in 2000/2001. Indicator results for small schools tend to be more variable than those for larger schools and caution should be used in interpreting the results for smaller schools.

Right: The school's academic rank in the province. In this example, the school is ranked 175th out of 464 schools in 2000/2001 and 155th out of 422 schools for the five-year period, 1997 to 2001. These ranks indicate how the school is doing academically compared to all the other schools of the province. A high ranking over five years indicates consistently strong results at the school. The rank is based on the *Overall rating out of 10*.

5 Left: Average employment income of the parents of students at the school. Higher parental income is sometimes associated with better student performance.

Right: The school's rank within its administrative region. In this example, the school was ranked first out of 10 schools in 2000/2001 and second out of 10 for the five-year period, 1997 to 2001. The regional rank indicates how the school is doing compared with other schools in the same administrative region. The rank is based on the *Overall rating out of 10*.

6 Left, Late entry(%): the proportion of students entering Secondary IV who are 16 years old or more. They are older than most students at this grade level. Late entry is an indication of the past academic achievement of the students as they enter the last two years of the secondary school program. A high rate of late entry students at the beginning of Secondary IV may partially explain lower student per-

formance at the school. This school's proportion of 30.9% late entry students is higher than the average.

Centre, EHDAA (%): Special needs (EHDAA) enrollment indicates the proportion of pupils in Secondary IV and Secondary V who are considered disabled or who have certain specific learning and/or behaviour difficulties and for whom public school districts receive additional funding. Since private schools do not generally receive funding for EHDAA students, most will not have significant EHDAA percentages. A high rate of EHDAA may partially explain lower school performance.

Right, Value added: This is an estimate of the school's contribution to its *Overall rating out of 10*. Schools that have a strong, positive impact on their students receive an A for this indicator. Those that have little impact receive a D. Schools that receive a B or a C may have some positive impact on their students.

8–12 Average exam marks: The average marks obtained by the school's students on each of five uniform examinations. Exams in Language of instruction and Second language courses are administered in Secondary V. Exams in History, Physical Sciences, and Mathematics are administered in Secondary IV.

13 Fail rate: The proportion of these uniform exams written by the students that received a failing grade.

14 Grade inflation by the school: The amount in percentage points by which the students' average school marks in all of the five courses exceed the average marks obtained by the students on the uniform exams. Schools with a higher value on this indicator may be inflating the school marks.

15 and 16: Gender gaps: The percentage points by which the average uniform exam marks in Language of instruction and Physical sciences favour either male or female students. When female students

are more successful, an **F** precedes the value; when male students are more successful, an **M** precedes the value.

17 Perseverance rate: The proportion of Secondary IV students at the school who either receive a diploma (or other completion certificate) or re-enroll in a Quebec school in the following year multiplied by the proportion of Secondary V students who either receive a diploma (or other completion certificate) or re-enroll in a Quebec school in the following year. Schools with high values on this indicator have done a good job of ensuring that their students remain in school in order to complete their program of studies. (Note: Due to the absence of certain required data, it was necessary to replace last year's Promotion rate with this new indicator. Since these two rates cannot be compared, only the Perseverance rate appears in the *Report Card*.)

18 Overall rating (out of 10): The Overall rating takes into account all of the school performance indicators, in order to answer the question, "In general, how is the school doing academically?"

Trends: Trends show any statistically significant change in the school's performance on the indicators and *Overall rating*. Trends are only determined where at least five years of data are available. If school performance is improving, an upward pointing arrow (▲) will appear. If the school's performance is deteriorating, a downward pointing arrow (▼) will appear.

Other notes

Note 1

Not all of Quebec's secondary schools are included in the tables or the ranking. Excluded are schools with less than 15 students enrolled in Secondary V and other schools that did not generate a sufficiently large set of student data to enable the calculation of an *Overall rating out of 10*. Also excluded from the *Re-*

port Card are centers of adult education and continuing education, schools that cater solely or largely to non-resident foreign students, and certain alternative schools that do not offer a full program of studies.

The exclusion of a school from the Report Card should in no way be considered to be a judgement of the school's effectiveness.

Note 2

In order to take advantage of improvements in methods and the design of the indicators while ensuring the comparability of year-to-year results, some historical values have been recalculated. For

this reason, the historical results for some schools may vary slightly from those published in previous editions of the Report Card.

Note 3

When the available data are insufficient for the calculation of an indicator or when a school did not function during a certain year, "nd" appears in the tables.

Note 4

You can compare the results of a school with these all-schools average results.

Average for all schools

EHDAA (%): 1,6

Nombre d'élèves: 777

Revenus des parents: 44 700 \$

En retard (%): 26,0

Performance scolaire	1994	1995	1996	1997	1998	1999	2000	2001	▲▼
Résultats aux épreuves (%)									
Langue maternelle	72.1	71.5	73.2	75.7	69.0	74.7	75.4	73.6	—
Langue seconde	77.8	76.6	77.4	76.7	81.6	80.2	80.7	78.8	—
Histoire	68.4	70.2	68.4	66.2	75.2	70.4	67.7	71.0	—
Sciences physiques	48.7	62.0	64.3	61.8	73.5	69.2	75.0	72.9	—
Mathématiques	nd	nd	nd	nd	nd	nd	nd	64.3	nd
Échec (%)	18.0	18.2	15.8	15.7	14.3	15.0	13.5	17.1	—
Surestimation par l'école (%)	3.0	1.9	1.9	2.8	1.6	2.3	1.8	2.4	—
Écart sexes (%): Langue mat.*	5.2	4.8	5.0	4.7	5.4	4.9	5.0	5.0	—
Sciences phy.*	3.2	2.9	3.4	2.8	3.1	3.0	3.0	3.0	—
Taux de persévérance (%)	nd	nd	nd	nd	nd	nd	nd	89.0	nd
Cote globale (sur 10)**	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	—

* These results reflect the average size of the gender gaps. In 2000/2001, the gender gap in Language of instruction favoured female students at 93% of schools. In Physical sciences, the gender gap favoured male students at 68% of the schools.

** Since they are calculated from standardized scores, the Overall rating out of 10 for all schools will not change significantly over time.

Where to find the detailed results tables

The tables showing the detailed results for the schools will be found on pages 24 to 81 of the French version of this study, *Bulletin des écoles secondaires du Québec: Édition 2002*.



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 463) 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 2000/2001. 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 of Quebec's secondary schools are included in the tables or the ranking. Excluded are schools with less than 15 students enrolled in Secondary V and other schools that did not generate a sufficiently large set of student data to enable the calculation of an *Overall rating out of 10*. Also excluded from the *Report Card* are centers of adult education and continuing education, schools that cater solely or largely to non-resident foreign students, and certain alternative schools that do not offer a full program of studies.

The exclusion of a school from the *Report Card* should in no way be considered to be 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 82 to 98 of the French version of this study: *Bulletin des écoles secondaires du Québec : Édition 2002*.



Schools that contribute greatly to their students' success

In this table, we list the 109 schools that received the highest possible rating for value added. The value

added mark is based on results for the school year 2000/2001.

Where to find the value-added table

The table showing the value-added of the schools will be found on pages 99 to 102 of the French version of this study: *Bulletin des écoles secondaires du Québec : Édition 2002*.



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 Mathematics and 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 first standardized and then aggregated according to ministry-defined weightings to produce an overall standardized result for the course. These results 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 five overall standardized results described in 4 above were then combined with the standardized *Perseverance rate* (in 2000/2001, the *Promotion rate* indicator was the sixth indicator and prior to 2000/2001

only the five indicators in 4 above were 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 *Perseverance rate*—20%. Where fewer than two gender gap indicators could be calculated, the weightings used were as follows: *Examination marks*—45%, *Fail rate*—22%, *School level grade inflation*—11%, and *Perseverance rate*—22%.

- 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 (6) above and adjusted as required for minimum and maximum values as noted in (7) above. Also, as noted in (7) above, $OR_{min} = 0$, $Z_{min} = -3.29$, and $Z_{max} = 2.0$.
- 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.



Appendix 2: Parameters used for the estimation of value added by the school

Table App2 reports the coefficients of regression, B (unstandardized) and β (standardized), resulting from the structural equation model used to define the Value added measure. The analysis was carried out using EQS version 5.7b software.

After a preliminary analysis of the results, transformations of four variables were adopted in order to reduce dissymmetry and to improve the normality, linearity, and homoscedasticity of the residual variances. A logarithmic transform (Ln) was calculated for PARENT INCOME, and square root transforms (SQRT) were calculated for STUDENT ENROLLMENT, LATE ENTRY and OVERALL RATING.

The analysis produces three fit indices, NFI, NNFI, and CFI that indicate the extent to which the model can predict the variances of all of the variables in the model. High values of these indices such as those reported in Table 1 above are an indication that the model fits the data well. In addition to the regression coefficients B and β , the table presents the correlation coefficient, average, and standard deviation of each of the independent variables. The R^2 statistic of 0.67 represents an improvement in the sensitivity of the model over those used in the previous editions of the *Report Card*.

The Value added indicator is derived by solving the following equation:

$$\text{Value added} = (\text{Sqrt Root Overall rating} - (0.381 * \text{Ln Parent Income} - 0.139 * \text{Sqrt Late Entry}))$$

The schools were sorted in descending order according to their *Value added*. Then, a letter grade of A was assigned to those schools in the first quartile, B to the schools in the second quartile, C to the schools of the third quartile, and finally, D to the schools of the fourth quartile.

Table App2: Structural equations model of factors directly effecting the Overall rating out of 10, calculated using the maximum probability method

Variables	OVERALL RATING SQRT*	PARENT INCOME Ln	LATE ENTRY SQRT	STUDENT ENROLLMENT SQRT	LANGUAGE OF INSTRUCTION	B	β
PARENT INCOME Ln	0.450					0.381	0.126
LATE ENTRY SQRT	-0.756	-0.480				-0.139	-0.609
STUDENT ENROLLMENT SQRT	0.119	0.002	-0.006			0.04	0.094
LANG. OF INSTRUCTION	0.552	0.440	-0.534	-0.291		0.201	0.208
AFFILIATION	0.176	-0.236	0.093	0.352	-0.024	0.244	0.239
Averages	1.1624	4.6301	4.8122	26.7861	0.23		
Standard deviations	0.4131	0.1343	1.8157	9.5878	0.42		$R^2 = 0.670$
N = 431**	Model of independence, χ^2 : 978.67; dl: 21 χ^2 : 43.17 dl: 8			NFI: 0.956; NNFI: 0.904; CFI: 0.963			

* The sign of the square root of the *Overall rating* was reversed to take into account the characteristics of the distribution.

** We had complete contextual data for 431 schools out of the 464 rated schools. However, we were able to calculate the value added indicator for 436 schools because the final calculation required values for only three variables.



About the authors & Acknowledgments

Richard Marceau

Richard Marceau is a professor at the National School of Public Administration (ENAP), University of Quebec. He is also an associate researcher at the Montreal Economic Institute. Prof. Marceau obtained his bachelor's degree in physics from Laval University, his Master's in Water Sciences at the National Institute of Scientific Research, University of Quebec, and his Ph.D. in Political Science from Laval University. His teaching at ENAP relates mainly to program evaluation and public-policy analysis. His research in policy analysis is concentrated in the environmental and education sectors. Prof. Marceau's publications include program evaluation studies in wastewater management, university studies programs, and regional economic development. Works in environmental policy include: *L'eau potable en milieu rural québécois: habitudes de consommation, défection économique et démarches politiques*, 2000 (with François Therrien); *Pollution Taxes, Subsidies and Rent-Seeking*, 1993 (*Canadian Journal of Economics* with Jean-Luc Migué) and *Des élus et des milliards: l'assainissement des eaux au Québec* 1986. Works in education policy include: *La question scolaire au Canada*, 1998 (with Jean-Luc Migué, Policy Options); *Conséquences du choix de l'école: Effectifs, financement, dépenses par élève et résultats scolaires au primaire et au secondaire*, 1996 (avec Stéphane Couture); *Le monopole public de l'éducation*, 1989 (with Jean-Luc Migué).

Peter Cowley

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.

Sylvain Bernier

Sylvain Bernier is a doctoral student at the National School of Public Administration (ENAP). He obtained his bachelor's degree in political science and economics at Bishop's University in 2000 and his Master's degree in program evaluation from ENAP in 2001. His Masters thesis, *"The Effects of Standardization and Weighting on Composite Robustness: the Case of Secondary Schools Performance"* was written under the supervision of Prof. Marceau. His current research interests relate mainly to the economics of education, skews of selection, and statistical methods in performance evaluation of the schools. Mr. Bernier made a significant contribution to the methodological innovations developed for this edition of the *Report Card*

Acknowledgments

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