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Introduction

The *Report Card on Quebec's Secondary Schools: 2006 Edition* (hereafter, *Report Card*) collects a variety of relevant, objective indicators of school performance into one, easily accessible public document so that anyone can analyze and compare the performance of individual schools. By doing so, the *Report Card* assists parents when they choose a school for their children and encourages and assists all those seeking to improve their schools.

The Report Card helps parents choose

Where parents can choose among several schools for their children, the *Report Card* provides a valuable tool for making a decision. Because it makes comparisons easy, it 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 visit schools under consideration and speak with the staff.

Of course, the choice of a school should not be made solely on the basis of a single source of information. Web sites maintained by the provincial ministry of education and local school boards may also provide useful information.¹ Parents who already have a child enrolled at the school provide another point of view. Naturally, a sound academic program should be complemented by effective programs in areas of school activity not measured by the *Report Card*. Nevertheless, the *Report Card* provides a detailed picture of each school that is not easily available elsewhere.

The Report Card facilitates school improvement

Certainly, the act of publicly rating and ranking schools attracts attention. Schools that perform well or show consistent improvement are applauded. The results of poorly performing schools and those whose performance is deteriorating generate concern. This attention, in itself, provides an incentive for all those connected with a school to redouble their efforts to improve student results.

However, the *Report Card* offers more than just incentive. It includes a variety of indicators, each of which reports results for an aspect of school performance that may be improved. School administrators who are dedicated to improvement accept the *Report Card* as another source of evidence that their schools can do a better job.

Some schools do better than others

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

Comparisons are at the heart of the improvement process

By comparing a school's latest results with those of earlier years, we can see if the school is improving. By comparing a school's results with those of neighbouring schools or schools having similar school and student characteristics, we can identify more successful schools and learn from them. Reference to overall provincial results places an individual school's level of achievement in a broader context.

There is great benefit in identifying schools that are particularly effective. By studying the techniques used in schools where students are successful, less effective schools may find ways to improve. This advantage is not lost on the United Kingdom's Department for Education and Skills. Its Leading Edge program³ helps educators connect with others who have expertise in particular areas of instruction and school administration.

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

What's new in this edition?

Since 2001, the *Report Card* has included a measure of the value added by the school—the extent to which the work of teachers and support staff has a positive impact on student results. In the preparation of the value-added measure, we recognized three major factors in school performance: student characteristics, family characteristics, and the actions of the school. The indicator used in the value-added calculation to measure student characteristics is *Late Entry* (in the tables, *En retard*), the percentage of students entering Secondary IV who are older than one would expect. Increases in this statistic were found to be associated with lower school performance.

The data suggest that, in general, students whose education has been delayed have encountered some difficulty in prior years, the result of which is that

they are not as well prepared for the academic work required of them during their last two years in high school.

This year we introduce an indicator (in the tables, *Cote, élèves en retard*) that measures the extent to which each school succeeds in helping its Late Entry students succeed. It gives each school with a sufficient number of Late Entry students a score based on how they do on all but one of the *Report Card's* results indicators. Using this new indicator, readers can see how schools compare based solely on the academic results of their *En retard* students.

For this edition, *Cote, élèves en retard*, will not be used in the calculation of the overall rating. Once we have received comment from interested parties on the value of this new indicator, we will decide what weight the indicator will be given in the overall ratings calculated for subsequent editions.

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

The *Report Card* program benefits from the input of interested parties. We welcome your suggestions, comments, and criticisms. Please contact Peter Cowley at 604-714-4556.

Notes

- 1 See, for instance, the Ministry of Education's website at <http://www.meq.gouv.qc.ca/GR-PUB/m_englis.htm> (as of October 5, 2006).
- 2 See, for instance, Michael Rutter et al., *Fifteen Thousand Hours: Secondary Schools and Their Effects on Children* (Cambridge, MA: Harvard University Press, 1979); Peter Mortimore et al., *School Matters: The Junior Years* (Wells, Somerset: Open Books, 1988); and *Hope for Urban Education: A Study of Nine High-Performing, High-Poverty, Urban Elementary Schools* (The Charles A. Dana Center, University of Texas at

Austin, 1999). Digital document: <<http://www.ed.gov/pubs/urbanhope/index.html>> (as of October 5, 2006).

3 See the Leading Edge program site at <<http://www.standards.dfes.gov.uk/leadingedge/>> (as of October 5, 2006).



Key indicators of school performance

The foundation of the *Report Card* is an overall rating of each school's academic performance. In large part, we base our overall rating on the students' results in six core academic courses: Secondary-V level courses in the language of instruction, Mathematics, and second languages and Secondary-IV level courses in History of Quebec and Canada, Physical Sciences, and Mathematics.¹ From these results and grade-to-grade transition data, we calculate the following indicators:

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

The first four 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 fifth 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 timely completion of their chosen secondary school program.

We have selected this set of indicators because they provide systematic insight into a school's performance.² 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 counseling

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 examination sittings in each of the five subject areas. For the purposes of the calculation of the *Overall rating out of 10*, the average marks for all five subject areas 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 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.

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. The *Promotion rate* (noted in the tables as *Taux de promotion*) measures the proportion of students in each school who do so. While there are factors not related to education—absence or emigration from the province, sickness, death, and the like—that can affect the data, there is no reason to expect these factors to influence particular schools systematically. Accordingly, we take variations in the *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 of two measures calculated from the experience of both the Secondary-IV and Secondary-V classes at the school.

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, at the minimum, we believe that 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 received a diploma or other qualification at the end of the school year or re-enrolled in any program in the following year. Then, we multiplied the result by the proportion of the school's Secondary-V students who either received their diploma at the end of the school year or re-enrolled in any program in the following year.

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 Secondary-IV students at the school who either received a diploma or other qualification by the end of the year or were promoted to the Secondary-V level by the proportion of the school's Secondary-V students who obtained a diploma or other qualification 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.³ 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. Using a real student cohort, such as that of students who began Secondary IV in September of 2004 and were scheduled to receive their diplomas in June of 2006, would not measure the effectiveness of the individual school but that of the school system because the available data reports student certification and re-enrollment within the 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.⁴

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 six 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 third 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 courses failed

For each school, this indicator (noted in the tables as *Échec*) provides the combined rate of failure (as a percentage) in the courses that form part of the five core subject areas. It was derived by dividing the sum, for each school, of the courses taken by the students where a failing grade was awarded by the total number of examinations taken in these courses by the students of that school. In part, effective teaching can be measured by the ability of all the students to complete a course successfully.

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 Québec and Canada at the Secondary-IV level). Anglophone students must also successfully complete French as a second language at the Secondary-V level. The 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 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 courses failed as an indicator of the effectiveness of the school in meeting the needs of all its students.

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 Québec’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 2004/2005 reported in this *Report Card*

show that at 96% of the schools, female students did better than male students on the Secondary-V examinations in Language of instruction. In addition, at 55% of the schools, female students outscored their male classmates in the Secondary-IV examinations in physical science.

The indicators—Gender gap: language of instruction (in the tables, *Écart sexes: langue d'enseignement*) and Gender gap: physical sciences (in the tables, *Écart sexes: sciences physiques*)—are calculated by determining the difference between the two sexes on the average uniform examination results in each of the courses.⁶

Schools with a low gender gap are more successful than others in helping students of both sexes 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.

The standardized scores were then weighted and combined to produce an overall standardized score. 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.) 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 *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. In evaluating the results of a school, it is important not to rely solely on the school's most recent overall rating. In the detailed tables of results, the *Overall rating* of the school over several years is provided so that readers can see how the school has been doing over time. In the ranking table, both current rank and overall ratings as well as the average rank and overall rating for the most recent five years are provided. By referring to these statistics, readers will get a better idea of the future performance of the school than can be provided by a single year's results.

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 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 (in the

tables, Tendances). 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 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 and Secondary-V levels, 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.
- 2 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.
- 3 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 promotion 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.
- 4 See <<http://www2.education.gouv.fr/ival/brochure.html>>. The French ministry uses the expression *cohorte fictive* 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 the promotion of students 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—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.
- 5 Peter Cowley and Stephen Easton, *Boys, Girls, and Grades: Academic Gender Balance in British Columbia's Secondary Schools* (Vancouver, BC: Fraser Institute, 1999).
- 6 Where examinations in both English and French as language of instruction 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.



Other indicators of school performance

The value added by the school

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 six contextual indicators, of which all but *EHDAA*¹ are used in the calculation of the value added by the school. They are as follows:

- 1 Late entry (noted in the tables as *En retard*) indicates the proportion of the students who are 16 years of age or older when they begin their Secondary-IV year. 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, the indicator also allows us to isolate the effect of selective enrollments by some private and public schools.

- 2 Average parents’ employment income (noted in the tables as *Revenus 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 from the 2001 census provided by Statistics Canada.
- 3 The total student enrollment (*Nombre d’élèves*) at the school.
- 4 The affiliation of the school, whether private or public. This is shown in the tables with indicator 5 (below) as part of the indicator *Secteur*.
- 5 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 2001 Census to establish a profile of the student body’s family characteristics for each of the schools in the *Report Card*. We then used structural equation modeling²—a technique related to multiple regression analysis—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*.³ We added to this profile the average values for student characteristics (*Late entry*) and certain school characteristics (*student enrollment, school affiliation, and language of instruction*).⁴

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.⁵ 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 10*, 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.

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 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.

How effective is the school in teaching struggling students?

The analysis of report-card data in the calculation of the value added measure described above, indicates that, on average, the greater the number of *Late entry* students attending a school, the lower will be that school's overall rating.

That finding suggests that, in general, *Late entry* students are, for whatever reason, not as well prepared or are less able to take on the academic work required of them during the last two years of secondary school. It is not surprising, however, that *Late entry* students at some schools seem to do better academically than those at other schools. Of course, some of the differences can be accounted for by the specific reasons

why the students at a school are older upon enrollment in Secondary IV than is normally the case. For example, a school's *Late entry* student population is composed entirely of capable, allophone students who arrived in Quebec with little or no knowledge of French, their progress through school may be delayed solely because of their difficulty with French. At the same time, their academic performance in mathematics and the sciences may be strong.

Nevertheless, it is instructive to compare the results of *Late entry* students among schools to identify those schools that appear to be more successful in assisting *Late entry* students to achieve academic success in the last two years of secondary school. Introduced in this edition is an indicator (in the tables *Cote, élèves en retard*) of the comparative success of schools in dealing with the challenges facing *Late entry* students. It is calculated in exactly the same way as is the *Overall rating out of 10* with the sole exception that the *Taux de promotion* indicator is not included in the calculation of this new indicator.

Thus, the *Cote, élèves en retard* allows readers to compare schools based on the results of their *Late entry* students only. In doing so, it reflects the extent to which each school is able to assist all its students, regardless of the challenges they face, to succeed in their academic work.

Note that, in order to ensure sufficient data with which to calculate the *Cote, élèves en retard* indicator, it is only available for schools with at least 15 *Late entry* students in Secondary V. Also note that, in order to allow all interested parties to reflect and comment on the usefulness of this indicator, *Cote, élèves en retard* was not used in the calculation of the overall ratings in this edition. We expect that it will contribute to the school ratings next year.

Notes

1 “EHDAA” is the abbreviation for “Enfants handicapés ou en difficulté d’adaptation 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. Percentage *EHDAA (%)* is noted in the detailed tables as a measure of context within which to interpret the *Overall rating*. It was, however, excluded from the calculation of the *Value added* indicator for three reasons. First, because the student counts upon which the indicator is based reflect only EHDAA students funded by the Ministry, they will vary with any changes to students’ eligibility for funding. Thus, the indicator is unstable. Second, in most cases, private schools receive no extra funding for their *EHDAA* students and, as a result, no data is available on their *EHDAA* enrollment. Finally, *EHDAA* students are likely to be included in the *Late entry* counts that are available for all schools.

- 2 The analysis was carried out on the software, *EQS*, version 6.1. After a preliminary analysis of the results, we carried out transformations (logarithmic curve or square root) on three indicators *Average parents’ employment income*, *Total student enrollment*, and *Late entry* to reduce dissymmetry and to improve normality, linearity, and the homoscedasticity of the residual variances.
- 3 Several socio-economic indicators including average age of the parents, the number of years of schooling of the parents, parental income from employment, and parental government transfer income are strongly correlated. The precision of the analysis loses very little when only *Average parents’ employment income* is used in the analysis. In addition, the interpretation of the results is considerably simplified.
- 4 For a more detailed explanation of the model underlying the value-added measure, see Richard Marceau and Peter Cowley, *Report Card on Quebec’s Secondary Schools: 2004 edition*, page 14.

- 5 In the first edition of the *Report Card*, we were able to account for roughly 39% of the variation among schools in the *Overall rating*. For that edition, we produced an indicator that corrected for family characteristics. Further analysis for the second edition allowed us to account for about 60% of the variation between schools. Our model now enables us to account for nearly 70% of the variance in the *Overall rating*, giving us considerable confidence in the model.



Detailed school reports

How to read these tables

Use the sample table and the explanation of each line below to help you interpret the detailed results for individual schools. Readers should seek to confirm the *Report Card's* findings by visiting the school

and interviewing teachers, school administrators, and other parents. More information regarding results at individual schools can be found on the Ministry of Education web site at: <http://www.meq.gouv.qc.ca/GR-PUB/m_englis.htm> and on the web sites of local school boards and schools.

1- RÉGION ADMINISTRATIVE									
2- NOM DE L'ÉTABLISSEMENT									
3-	Secteur public francophone						2005	2001-2005	
4-	Nombre d'élèves: 155						Rang provincial: 119 / 458	210 / 434	
5-	Revenus des parents: 57 600 \$						Rang régional: 1 / 11	4 / 10	
6-	En retard (%): 12,5						EHDAA (%): 2,2 Valeur ajoutée: B		
Résultats aux épreuves									
		1999	2000	2001	2002	2003	2004	2005	Tendances
7-	Langue d'enseignement (%)	74,1	68,2	65,5	68,1	68,3	73,2	76,1	▲
8-	Langue seconde (%)	89,0	91,7	84,8	85,5	86,6	94,8	92,0	▲
9-	Histoire (%)	71,2	61,9	57,1	62,3	71,9	71,0	70,6	—
10-	Sciences physiques (%)	72,6	79,2	61,9	62,4	81,3	67,5	76,6	—
11-	Mathématiques (%)	nd	nd	nd	nd	75,7	63,3	63,6	nd
12-	Échec (%)	11,7	12,0	36,4	27,5	12,5	14,4	12,2	▲
13-	Surestimation par l'école (%)	1,4	1,8	1,4	3,3	1,2	4,7	2,9	—
14-	Écart sexes (%): Langue d'ens.	nd	nd	nd	nd	nd	nd	nd	nd
15-	Sciences phy.	nd	nd	nd	M 14,1	nd	nd	nd	nd
16-	Taux de promotion (%)	nd	nd	nd	70,0	85,7	82,5	77,4	nd
17-	Cote, élèves en retard	nd	nd	nd	nd	nd	nd	nd	nd
18-	Cote globale (sur 10)	7,1	6,5	4,3	4,7	7,8	6,3	7,2	—

- The name of the administrative area in which the school is located. This appears only above the first school listed in the administrative area.
- The name of the school.
- The school's affiliation (public or private) and language of instruction (French or English).
- Left** The number of students enrolled at the school in 2004/2005. Indicator results for small schools tend to be more variable than those for larger schools so caution should be used in interpreting the results for these schools.

Right The school's academic rank in the province. In this example, the school is ranked 119th out of 458 schools in 2004/2005 and 210th out of 434 schools for the five-year period, 2001 to 2005. These ranks indicate how the school is doing academically compared to all 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 1st out of 11 schools in 2004/2005 and 4th out of 10 schools for the five-year period, 2001 to 2005. 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 performance at the school. This school's proportion of 12.5% late entry students is lower than the average.

Centre EHDAA (%): Special needs enrollment indicates the proportion of pupils in Secondary IV and Secondary V who are considered disabled or who have certain specific learning or behavioural 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 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.

7-11 Average exam marks: The average marks achieved by the school's students in each of five subject areas. Examinations in Language of instruction and Second language courses are administered in Secondary V. Examinations in History and

Physical Sciences are administered in Secondary IV. The Mathematics indicator includes one examination administered in each of Secondary IV and Secondary V.

12 Fail rate: The proportion of these courses completed by the students that were failed.

13 Grade inflation by the school: The amount in percentage points by which the students' average school marks in all of the five subject areas 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.

14 and 15 Gender gaps: The percentage points by which the average uniform examination 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.

16 Promotion rate: This indicator takes into account the proportion of Secondary IV and Secondary V enrolled at the school that either (a) receive a diploma or other qualifications at the end of the year or, (b) return to school in the following year for further study. 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 in a timely manner.

17 Late entry score: This indicator (ranging from zero to 10, where 10 indicates best performance) shows how the school's *Late entry* students (those who are at least 16 years old upon enrollment in Secondary IV) are doing academically compared to the *Late entry* students in other schools. Research indicates that schools with high percentages of *Late entry* students generally score lower on the report card's *Overall rating out of 10*. Thus, a high score on this indicator suggests that the school is doing a good

job of enabling its *Late entry* students to succeed. This indicator value does not contribute to this year's *Overall rating*.

- 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?" It is important to consider how much the *Overall rating* varies from year to year in order to get a better idea of how the school might do in the future. 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.
- 19 Trends show any statistically significant change in the school's performance on the indicators and the *Overall rating out of 10*. 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. Where a dash (—) appears, no statistically significant trend is discernable.

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 *Report Card* are centres of adult education and continuing education, schools that enroll a significant number of 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 judgment 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 may 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 calcula-

ALL SCHOOLS AVERAGES

Nombre d'élèves: 868

Revenus des parents: 56 871 \$

En retard (%): 24,0

EHDAA (%): 11,8

Résultats aux épreuves	1999	2000	2001	2002	2003	2004	2005	Tendances
Langue d'enseignement (%)	74,7	75,4	73,7	71,3	67,8	71,1	72,4	—
Langue seconde (%)	79,7	80,4	78,7	79,8	77,8	78,5	76,2	—
Histoire (%)	70,3	67,6	71,0	66,7	72,0	74,7	71,4	—
Sciences physiques (%)	69,1	75,0	72,9	75,1	70,9	70,3	75,1	—
Mathématiques (%)	nd	nd	64,3	68,9	70,1	68,6	66,2	—
Échec (%)	15,2	13,6	17,1	17,3	19,0	14,2	19,7	—
Surestimation par l'école (%)	2,4	1,9	2,4	2,7	2,8	2,6	2,8	—
Écart sexes (%): Langue d'ens.	4,9	5,0	5,0	4,6	4,4	4,1	4,2	▲
Sciences phy.	3,0	3,0	3,0	2,8	3,3	2,7	2,6	—
Taux de promotion (%)	nd	nd	nd	79,1	78,8	79,7	79,9	nd
Cote, élèves en retard	nd	nd	nd	nd	nd	6,2	6,2	nd
Cote globale (sur 10)	6,2	nd						

* These results reflect the average size of the gender gaps. In 2004-2005, the langue d'enseignement gender gap favoured females at 95.7% of schools. The sciences physiques gender gap favoured females at 55% of the schools.

tion 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 the all-schools average results in the table on the preceding page.

Where to find the detailed tables

The tables showing the detailed results for the schools will be found on pages 22 to 67 of the French version of this study, *Bulletin des écoles secondaires du Québec: Édition 2006*.



Schools that contribute greatly to their students' success

In this table, we list the 107 schools that received the highest possible rating for value added. The value added mark is based on results for the school year 2004/2005.

The table will be found on pages 77 and 78 of the French version of this study: *Bulletin des écoles secondaires du Québec: Édition 2006*.



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 English and French versions of Mathematics 436 (Sec IV), Mathematics 514 (Sec V), and 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 first standardized and then aggregated with equal 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 *Promotion rate* to produce a weighted average summary standardized score for the school. For the school year 2000/2001, the *Perseverance rate* was used as the sixth indicator; for 1999/2000, an indicator similar to the *Promotion rate* was used; and, for all prior school years only the five indicators in 4 above were used to calculate the *Overall rating out of 10*. 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 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 *Promotion 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 to estimate the value added

Table 1 reports the regression coefficients β resulting from the multi-variate regression analysis used to define the *Value added* indicator.

After a preliminary analysis of the results, transformations of three 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* and *LATE ENTRY*.

In addition to the regression coefficients β , the table presents the correlation coefficients, average, and standard deviation of each of the independent variables.

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

$$\text{Value added} = \text{Overall rating} - (0.62 * \text{Ln Parental Income} - 0.56 * \text{SQRT Late Entry})$$

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 highest scoring quartile, B to the schools in the next quartile, C to the schools of the third highest scoring quartile, and finally, D to the schools of the remaining quartile.

Table 1. Multiple regression model: direct effects on the Overall rating out of 10 and correlation coefficients of the variables

Variables	OVERALL RATING OUT OF 10	Ln PARENTAL INCOME	SQRT LATE ENTRY	SQRT STUDENT ENROLLMENT	LANGUAGE OF INSTRUCTION	β
Ln PARENT INCOME	0.42					0.62
SQRT LATE ENTRY	-0.79	-0.53				-0.56
SQRT STUDENT ENROLLMENT	0.05	0.01	0.0			0.02
LANGUAGE OF INSTRUCTION	0.64	0.49	-0.56	-0.31		1.26
SCHOOL AFFILIATION	0.04	-0.25	0.10	0.32	-0.07	0.28
Averages	6.22	10.88	4.58	28.19	0.25	
standard deviations	1.87	0.33	1.88	9.81	0.43	
N = 427	$R^2 = 0.68$					



About the authors and Acknowledgments

Peter Cowley

Peter Cowley is the Director of School Performance Studies at The Fraser Institute. He graduated from the University of British Columbia with a B.Comm. in 1974. Shortly thereafter, he began a long career in marketing and general management in several sectors. During his assignments in general management, process improvement was a special focus and interest. In 1994, Mr Cowley independently 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 by *The 1999 Report Card on British Columbia's Secondary Schools*, *The 1999 Report Card on Alberta's High Schools*, and *Boys, Girls, and Grades: Academic Gender Balance in British Columbia's Secondary Schools*. Since then, Mr Cowley has co-authored all of the Institute's report cards on Canadian schools. Annual editions now include report cards on secondary schools in British Columbia & Yukon, Alberta, and Quebec and on elementary schools in British Columbia, Alberta, and Ontario as well as the *Report Card on Aboriginal Education in British Columbia*.

Norma Kozhaya

Norma Kozhaya is an economist at the Montreal Economic Institute (MEI), where she analyzes tax issues, labour regulations, and health-care and educational systems. She earned her Ph.D. in Economics from the University of Montreal, where she focused on international macro-economics and public finance. Her dissertation examined the effects of taxation and public spending on international economic models. She contributed to the research work in that department as well as in the Centre de recherche de développement en économique (CRDE). Ms Kozhaya also lectures for the University of Montreal's department of Economics.

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