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Third Annual Report Card on British Columbia's Secondary Schools

Peter Cowley and Stephen Easton

Contents

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Introduction

Every year at this time, we ask ourselves: Why should we measure the performance of schools? In previous editions of the Fraser Institute's *Report Card on British Columbia's Secondary Schools* (*Report Card*), the question has prompted a two-part answer.

First, we measure performance so that the schools will have an objective benchmark against which to improve. Measurement of results as the basis for improvement is widely practised in all kinds of organizations. In education, such measurement is routine. The United Kingdom's Department for Education and Employment annually produces and widely distributes detailed tables of performance-related measures for primary schools, secondary schools, and colleges.[1]

Closer to home, the education authorities in California and Oregon have moved beyond simply collecting and disseminating performance data. Last year, California enacted the Public Schools Accountability Act of 1999, which requires that its State Board of Education develop an Academic Performance Index (a single statistic much like the *Report Card*'s *Overall rating out of 10*) to measure the effectiveness of its elementary, middle, and secondary schools. In Oregon, a new state law requires the Department of Education to issue Performance Reports for the state's schools that rate the school on a number of dimensions. Like the *Report Card*, these overall indices are intended to answer an important question, "How is your school doing?"

Second, and equally as important, the Fraser Institute's *Report Card on British Columbia's Secondary Schools* measures and reports the performance of schools so that parents and students can make a more informed choice of an education provider.

Are our schools getting better?

Now, with the third edition, we have another reason to produce the *Report Card*. We have collected data over a long enough period to identify and publicly acknowledge those schools that have improved.

Eleven secondary schools in British Columbia have, over the last seven years, recorded a significant improvement in at least four of the *Report Card's* five academic performance indicators (table 1). Every year, the schools welcomed a new group of students with different abilities, interests, and motivations into the grade 12 class. Yet these schools steadily improved.

The students at these schools do not all routinely get top marks on the provincial examinations. In this year's provincial ranking, they range from sixth to 179th out of 271. But, they all share one important attribute: they are improving. Since a primary objective of the *Report Card* is to facilitate and encourage improvement, it is fitting that we open the *Third Annual Report Card on British Columbia's Secondary Schools* (third edition) with a salute to these 11 schools.

We hope that the example set by these schools will inspire others to set their schools on a course of constant improvement. In future editions of the *Report Card*, we shall continue to provide a public acknowledgement of their success.

There is other evidence that improvement is taking place in many schools in British Columbia. During the last five years, the overall ratings have begun to improve. The percentage of all schools in the *Report Card* that recorded a rating of 6 out of 10 or less has gone down from 56 percent to 39 percent. Those scoring between 6 and 8 have increased from 30 percent to 39 percent and those

Table 1 Secondary Schools in British Columbia showing significant improvement on four indicators, 1993–1999

District	School
Prince Rupert	Charles Hays Secondary
Sunshine Coast	Chatelech Secondary
Nanaimo	Dover Bay Secondary
Fort Nelson	Fort Nelson Secondary
Kootenay-Columbia	J. Lloyd Crowe Secondary
Arrow Lakes	Nakusp Secondary
New Westminster	New Westminster Secondary
Surrey	Princess Margaret Secondary
Abbotsford	Rick Hansen Secondary
Surrey	Semiahmoo Secondary
Langley	Walnut Grove Secondary

scoring over 8 have increased from just 14 percent in 1995 to 22 percent in 1998-99.

While this movement is encouraging, there is still a great deal to do. Indeed, much of the improvement in the *Overall rating* is the result of a rapid and dramatic increase in one indicator—the *Graduation rate*. This movement is unmatched in the other dimensions of school effectiveness that contribute to the *Overall rating*. There are also other dimensions not previously measured by the *Report Card* that merit the attention of school authorities and parents alike. Some of these are measured for the first time in this third edition.

What is new in this year's *Report Card*?

How well do schools take into account their students' socio-economic circumstances?

In the last edition, we introduced a measure of the socio-economic characteristics of the school's student body. This enabled parents and school officials to compare their school's results with the results of schools whose student body had similar socio-economic characteristics. Building on this base, for each school the third edition includes a measure of the difference between actual school performance as measured by the *Report Card*'s *Overall rating out of 10* and the level of performance that might be expected solely as a consequence of the socio-economic characteristics of its student body.

Is there a difference between the results of the two sexes at the school?

The difference between the school results of boys and those of girls is a vitally important issue. Pat Clark, then an assistant director in the British Columbia Teachers' Federation brought the issue into focus. He wrote, "Recent research however is showing that there has been an important change, boys used to catch up to the girls, now they don't. This explains why first-year admissions at UBC and SFU are now almost 60 percent female, a complete reversal from 25 years ago when female admissions were around 40 percent. Admissions to all but some technical and apprenticeship post-secondary programs and applied science faculties at universities are now predominantly female."[2]

In June of last year, we released *Boys, Girls, and Grades: Academic Gender Balance in British Columbia's Secondary Schools*. In this study, we showed that where student evaluation took place at the school level, girls were likely to do better than boys. We also found that the size of sex-based differences varied markedly among schools and concluded:

> Our findings suggest that the province's schools have great potential for improvement in the extent to which they enable learners of both genders to perform to their potential … To provide a benchmark against which annual progress can be measured, we will include a gender balance performance indicator in future editions of the … [*Report Card*].[3]

The *Gender Gap* indicator and ranking appears for the first time in this third edition. The indicator reports which sex received the highest average school mark in each of two important courses—English 12 and Mathematics 12—as well as the actual difference in percentage points between the two results. It shows how effective the school has been in minimizing the differences in results between the sexes.

Improving school results for students of both sexes requires continued research and experimentation. School-level initiatives can make a difference. A statistical review conducted by the Notley High School[4] in Essex, England, showed that boys were not doing as well as their female counterparts at school, particularly in reading comprehension. Teachers and school officials began experimenting with a variety of mechanisms to improve boys' learning while maintaining or improving that of the girls. These included teaching boys differently from girls, closer individual monitoring, early remedial work where required, and a redesign of classroom seating to bring into proximity students who can help each other learn. Teachers also reported that until the measurement and publication of results, they had been largely unaware of this widespread problem.

These new indicators provide school administrators, teachers, counsellors, and parents with another benchmark upon which to plan improvements that will make the school more effective.

Do students in the school do better in some courses than in others?

In order to provide more in-depth information to parents, administrators, and other interested groups, the third edition also includes a snapshot of each school's results in the eight most popular provincially examinable courses. Both average final examination mark and the rate of participation are provided. Readers can easily compare a school's performance in a variety of courses and can also compare corresponding results among schools.

What plans do we have for future editions?

Measuring the value added by the school: The Foundation Skills Assessment Tests

Early in 1999, the measurement of school performance in British Columbia suffered a temporary setback when the Ministry of Education decided not to release school-level Provincial Learning Assessment Program 1999 test results. These annual tests measure students' ability in reading, writing, and mathematics at grades 4, 7, and 10. It was our intention eventually to include the results from the annual grade 10 tests (now called Foundation Skills Assessment tests) in the *Report Card*. By comparing grade 10 results with the same cohort's results in grade 12 English and Mathematics, we hoped to establish an estimate of the "value added" by the school during the student's final two years of secondary school. Fortunately, the Ministry has decided once again to release school-level data beginning with the May 2000 FSA test series. We are encouraged that this important data will again be available for analysis.

Anybody there? Taking the pulse of the school by measuring student attendance levels

Most improvements to the *Report Card* depend on the availability of new information and, unfortunately, the Ministry of Education maintains a rather limited database of information about the performance of individual schools. Measurement of school performance often requires data collected and controlled by the province's 60 school districts and its many independent schools. Obtaining these data can prove difficult.

Last summer, we requested information on average student attendance from all the public school districts. We had planned to use this data in the *Report Card* as an indicator of the extent to which schools were successful in engaging the interest and attention of their students. After all, it is difficult to teach students if they are present only sporadically. We also wanted to verify research that showed that high attendance levels were associated with greater student academic success and with reductions in anti-social activities like theft and the use and sale of illegal drugs.

School attendance is also a matter of considerable interest to all taxpayers because school funding is based on a single, annual headcount of students on September 30 rather than on daily attendance in class. Taxpayers pay for the operation of the public school whether its students attend class or not: poor attendance represents a waste of public funds.

Regrettably, not one of the province's school districts has yet provided basic attendance data. Many explained that they do not collect this information from each school. We will continue our efforts to acquire the data and incorporate this important school performance measure into the *Report Card*.[5]

Key academic indicators of school performance

The foundation of the *Report Card* is an overall rating of each school's academic performance. Building on data about student results provided by the Ministry of Education,[6] we rate each school on a scale from zero to 10.

We base our overall rating of each school's academic performance on five indicators:

1 average provincial examination mark

2 percentage of provincial examinations failed

3 difference between the school mark and examination mark in provincially examinable courses

4 provincially examinable courses taken per student

5 graduation rate.

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

To make the indicators as transparent as possible we have kept manipulation of the Ministry's data to the very minimum required. The process by which the five indicators are developed involves no significant editing of the raw data. Thus, parents, administrators, teachers, or other interested parties can replicate our measures with a minimum of effort.

Three indicators of effective teaching

1 Average provincial examination mark

This indicator (in the tables *Average exam mark*) is the average percentage achieved by a school's students on the uniform final examinations in all of the provincially examinable courses.[7] For each school, the indicator is the average of the mean scores achieved by the school's students in each of the provincial examinations at all sittings during the year, weighted by the relative number of students who wrote the examination.

Examinations are designed to achieve a distribution of results reflecting the differences in students' mastery of the course work. Differences among students in interests, abilities, motivation, and work-habits will inevitably have some impact upon the final results. However, there are recognizable differences from school to school within a district in the average results on the provincial examinations. There is also variation within schools in the results obtained in different subject areas (see section below, Are there any academic strengths or weaknesses at the school? *Course Results* for specific courses). Such differences in outcomes cannot be explained solely by the characteristics of the student body. It seems reasonable, therefore, to include the average examination mark for each school as one indicator of effective teaching.

2 Percentage of provincial examinations failed

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

In part, effective teaching can be measured by the ability of the students to pass any uniform examination that is a requirement for successful completion of a course. Schools have the respon-

sibility of preparing their students to pass these final examinations.

There is good reason to have confidence in this indicator as a measure of effective teaching. A student need only successfully complete one provincially examinable course in order to graduate. Such a student's course of study may not include the prerequisites for all post-secondary educational options but it will be sufficient for graduation from secondary school. Thus, students enroll in the provincially examinable courses, in large measure, because they want to take them. Further, their success in grade 12 reflects to a certain extent how well students have been prepared in the lower grades. All of the 20 provincially examinable courses have prerequisite courses. Indeed, depending on the school, admission to the grade 12 course may require that the student have received a prescribed minimum grade in the prerequisite lower-level course. Since the decision to take provincially examinable courses is, for the most part, voluntary and requires demonstrated success in previous courses, it seems reasonable to use the percentage of examinations failed in these courses as an additional indicator of the effectiveness of the teaching in secondary schools.

3 Difference between school mark and examination mark

For each school, this indicator (in the tables *School vs exam mark difference*) gives the average of the absolute value of the difference between the average mark obtained on the provincial examinations and the average "school" mark—the accumulation of all the results from tests, essays, quizzes, and so on given in class—for all the provincially examinable courses.[8]

Effective teaching includes regular testing of students' knowledge so that they may be aware of their progress. For such assessment to be useful, it must accurately reflect the student's understanding of the course material. 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. On the other hand, the systematic deflation of grades can work to the detriment of students in those situations where post-secondary admissions and scholarship awards are, in part, based on school assessments. Students may also lose interest in a subject when their actual understanding of the material is disparaged by inadequate recognition.

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

Two indicators of practical, well-informed counselling

During the secondary school years, students must make a number of decisions of considerable significance about their education. They will, for instance, annually decide whether to embark on, or continue, the learning of a second language. Before grade 9, they are required to choose between differ-

ent streams in Mathematics. In grade 12, they may face the choice of completing high school or abandoning it in favour of full-time work.

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

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

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

A decision in the negative would be comfortable for a student, especially one who lacks the kind of support that we are trying to measure. Students can quite easily rationalize taking less rigorous courses in grade 12 on the basis that these courses more closely parallel their present interests. Likewise, there are all sorts of reasons that can be advanced for deferring graduation: "The few courses I need can be picked up later." "I'm going to fail anyway, so why try?" "There's a job that pays $15.82 an hour available right now, so I can't afford to stay in school." The list is conveniently long. The decisions to be measured have been chosen because students without well-informed counsel may well select the more comfortable yet perhaps less productive options.

1 Provincially examinable courses taken per student

This indicator (in the tables *Exams taken per student*) measures the average number of provincially examinable courses completed by the students at a school. It is derived by summing the participation rates for all the provincially examinable courses taken at that school. (The *participation rate* is the ratio, for a school, between the number of students writing the provincial examination in a particular subject and the number of students enrolled in grade 12.)

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

Provincially examinable courses offer study at the senior level in a variety of core disciplines: English, other languages, the sciences, Mathematics, and the humanities. Course offerings in each area include alternatives that reflect the post-secondary ambitions of different groups of students. So, far from being courses only for a university-bound elite, these courses teach skills and knowledge that will benefit students no matter what they plan to do after graduation. Further, it is the marks obtained in these courses that are commonly used by post-secondary institutions—institutes of technology and community colleges as well as universities—to assess the applicant's readiness for further study and for admission to programs with limited enrollment. Thus, for most students a decision to take advantage of these courses is a good one and a school that is successful in encouraging students

to take these courses shows that it offers practical, well-informed counselling.

2 Graduation rate

This indicator compares the number of "potential" graduates enrolled in the school on September 30 with the number of students who actually graduate by the end of the same school year. Only those enrollees who are capable of graduating with their class within the current school year are included in the count of potential graduates.

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

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

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

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

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

To derive this rating, the results for all the years were converted into a score out of 10 using the following procedure. For each indicator, the results for the base-year (1992/1993) were sorted from highest to lowest. They were then divided into 10 ranges and each range was assigned a score between 10 and 1. The range that included the top 10 percent of results was given a 10; the next range, a 9; and so on. The results from each subsequent year were then assigned the number score corresponding to the range of values established in the base-year into which each fell.

The number scores for the five indicators were then averaged to produce the annual *Overall rating* for each school. The decile range tables for each of the indicators are provided in Appendix 1.

Other indicators of school performance

Since the inception of the *Report Card*, we have added other indicators that—while they are not used to derive the *Overall rating out of 10*—add more information on the school's effectiveness.

Is the school improving academically? The *Progress* indicator

On all but the indicator of specific course results (see below), The *Report Card* provides seven years of data. 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.

In order to detect trends in the performance indicators more easily, we developed a progress indicator. It uses regression analysis to identify those dimensions of school performance where there has been real change rather than a fluctuation in results caused by random occurrences outside the control of the school. Because trend calculation is very uncertain when only a small number of data points is available, trends are calculated only in those circumstances where at least four years of data are available and where they are determined to be statistically significant. In this context, the term "statistically significant" means that, nine times out of 10, the trend that is noted is real, that is, it would not have happened just by chance.

Are there any academic strengths or weaknesses at the school? *Course Results* for specific courses

While the basic academic indicators and the *Overall rating* described above provide an overview of the effectiveness of the school's academic programs, they do not tell us anything about the relative effectiveness of the specific academic departments within the school.

For example, at Springvalley Secondary in Kelowna, the average examination mark for the 1998-99 school year was 68.5 percent, about one percentage point above the provincial average. However, the school's average mark on the Mathematics 12 examination was 76.4 percent; nearly 10 percentage points above the provincial average. On the other hand, the school's average mark on the French 12 examination was 60.9 percent, more than 14 percentage points below the provincial average.

The *Third Annual Report Card on British Columbia's Secondary Schools* introduces a snapshot of the school's results in the most popular provincially examinable courses so that comparisons between different departments at the same school can be made. The indicator reports the average examination mark as a measure of the department's teaching effectiveness. The *participation rate* (shown in parentheses) indicates the extent to which the students have been encouraged to involve themselves in the subject area. (The participation rate is the ratio, for a school, between the number of students writing the provincial examination in a particular subject and the number of students enrolled in grade 12). This information along with course-specific data from the province as a whole (table 2, page 17) and other schools can help

parents, teachers, and administrators select specific subject areas where student achievement or participation rates might be improved.

How well does the school take into account differences among students?

1 The socio-economic indicator

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 overcome disadvantages that their students may have. The socio-economic indicator enables us to identify schools that are successful in spite of adverse conditions faced by their students at home. Similarly, it identifies schools where students with a relatively positive home situation appear not to be reaching their presumed potential.

The socio-economic indicator was derived as follows. First, using Ministry of Education enrollment data sorted by postal code and census data provided by Statistics Canada, we established a profile of the student body's home characteristics for each of the schools in the *Report Card*. We then used multiple regression analysis to determine which of the home characteristics were associated with variations in school performance as measured by the *Overall rating out of 10*. Taking into account all of the socio-economic variables simultaneously, we identified one characteristic that was significantly associated with the *Overall rating*: the average number of years of education of the most educated parent in a two-parent family (or of the lone parent in a single-parent family). When a school had more highly educated parents, the *Overall rating* at the school was likely to be higher. We have adopted this statistic—noted in the tables as *Parents' average education (yrs.)*—as the socio-economic indicator for this edition of the *Report Card*.

As a measure of the success with which each school took into account the socio-economic characteristics of the student body, we used the formula derived from the regression analysis to predict the *Overall rating* for each school.[9] We then reported the difference between the actual *Overall rating* and this predicted value in each school's results table.

For example, during the 1998-99 school year, David Thompson Secondary in Vancouver achieved an *Overall rating* of 7.2 and yet, when the family characteristics of the student body are taken into account, the school was expected to achieve a rating of only about 4.9. At Charles Bloom Secondary in Vernon, on the other hand, while its actual *Overall rating* was just 2.6, its predicted rating was 6.5. This measurement suggests that David Thompson is more successful than Charles Bloom in enabling all of its students to reach their potential.

This measure of the effect of the socio-economic background of a school's student body is presented with two important notes of caution. First, only about one-third of the variation between schools in the overall rating is associated with socio-economic factors. Clearly, many other factors—including good teaching, counselling, and school administration—contribute to the effectiveness of schools. Second, the statistical measures used describe past relationships between a socio-economic characteristic and a measure of school effectiveness. It should not be inferred that these relationships will or should remain static. The more effectively the school enables all of its students to succeed, the weaker will be the relationship between the home characteristics of its students and their academic success. Thus, this socio-economic indicator should not be used as an excuse or rationale for poor school performance. Rather, it should be used simply as an estimate of the extent to which the school has reduced the influence of family characteristics on student success. The effective school will produce good results, regardless of the family background of its students.

2 The *Gender Gap* indicator

Recent research[10] has noted systematic sex-based differences in academic results in British Columbia's secondary schools. These differences are particularly apparent where assessments are made by the local school rather than the Ministry of Education. However, the same research found that "there appears to be no compelling evidence that girls and boys should, given effective teaching and counselling, experience differential rates of success."[11] Further, "[t]he differences described by each indicator vary from school to school over a considerable range of values."[12]

The *Gender Gap* indicator measures the difference, if any, between the average school marks for male students and female students in the two most popular provincially examinable courses—Mathematics 12 and English 12. It reports the size of the difference and the more successful sex.

Like the socio-economic indicator, the *Gender Gap* indicator provides a measure of the effectiveness of the school in enabling all of its students to succeed. Schools with a low gender gap are more successful than others in enabling students of both sexes to reach their potential.

Notes to the text

1 Department for Education and Employment, www.dfee.gov.uk/perform.htm (January 17, 2000).

2 Pat Clark, *So Where Are the Boys?* digital document: www.bctf.bc.ca/ezine/archive/1997-01/support/Clarke.html (January 19, 2000), British Columbia Teachers' Federation.

3 Peter Cowley and Stephen Easton, *Boys, Girls, and Grades: Academic Gender Balance in British Columbia's Secondary Schools*, Public Policy Sources 22 (Vancouver, BC: The Fraser Institute, 1999): page 23.

4 The Notley High School and Essex Inspection and Advisory Service, Raising Boys' Achievement 1996-1998, digital document: notley-high.essex.sch.uk/rba/rba.html (January 17, 2000).

5 A further discussion of this controversy can be found in Peter Cowley, What Good is School . . . if Students Don't Show Up for Class? *Fraser Forum* (January 2000): pages 5–6.

6 The data from which these indicators are derived is contained in publicly accessible databases maintained by the Ministry for two purposes. School-level statistics describing student enrollment, programs offered, and certain characteristics of the school district provide the basis for determining the annual per-student operating grant each district will receive. Analysis of this same material aids Ministry staff in the assessment and planning of proposed capital projects as well as general policy planning. This data is collected by the Data Management and Student Certification Branch and much of it is available to the public on the Branch's web site (www.bced.gov.bc.ca/k12datareports/standardreports/frames/main.htm). The nature and extent of the data is indicated by the School Level Data Collection Manuals also available on site. Statistics on individual student performance are captured so that the Ministry is able to produce a transcript of marks for each student upon graduation from

grade 12. This transcript lists all the grade 11 and grade 12 courses that the student attempted and the results achieved. These results include the school mark for all such courses as well as the provincial examination mark for any provincially examinable grade 12 courses. Summary data files (at the school, district, and provincial levels) are available for public perusal on the Branch's web site (www.bced.gov.bc.ca/exams/standrep.htm). Values for the relevant statistics, for all public and independent secondary schools, for each of the seven school years between September 1992 to August 1999 are provided by the Ministry.

7 The following provincially examinable courses were offered for at least some of the years between 1992-93 and 1998-99: Applications of Mathematics 12, Applications of Physics 12, Biology 12, Chemistry 12, Communications 12, English 12, English Literature 12, French 12, Français Langue 12, Geography 12, Geology 12, German 12, History 12, Japanese 12, Latin 12 (discontinued in 1997-98), Mandarin 12, Mathematics 12, Physics 12, Punjabi 12, Spanish 12 and Technical and Professional Communications 12.

8 A student's final mark for a provincially examinable course is derived from both the mark received on the course's uniform provincial examination and a mark provided by the school. The final mark is the weighted average of the examination mark that accounts for 40 percent and the school mark that accounts for the remaining 60 percent.

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

10 Cowley and Easton, *Boys, Girls, and Grades*.

11 Cowley and Easton, *Boys, Girls, and Grades*: page 7

12 Cowley and Easton, *Boys, Girls, and Grades*: page 17