



# CANADIAN EDUCATION REPORT

# **Canadian Education Report**

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## Canadian Education Report

*The Canadian experience is perhaps more relevant for the United States than that of any other country. As an affluent, high-tech industrial society, Canada closely resembles the United States in per capita output, its market-oriented economic system, and labor force. And, much like the U.S., Canada struggles with political and cultural concerns arising from the diversity of its population of 32 million, 17 percent of whom identify themselves of French origin, 11 percent are Asian, Hispanic, and African-Canadians, and indigenous groups make up 3.3 percent.<sup>1</sup>*

*Canada has the highest stock of human capital in terms of educational attainment in the OECD. In 2001, the share of the adult population with tertiary education – not necessarily university-level -- was 40 percent (followed by the United States at 35 percent). Educational attainment is higher among 25-34 year-olds, around 50 percent, well above the OECD average of 28 percent. Over half of these individuals had university qualifications while the rest held college diplomas.*

### Governance

Unlike many other industrialized countries, Canada has no national-level government agency responsible for education; the Constitution vested the responsibility for education in the provinces. Each provincial system, while similar to the others, reflects its particular region, history and culture. The provincial departments of education - headed by an elected minister - set standards, draw up curricula guidelines, certify teachers, and give grants to educational institutions. The Minister reviews and authorizes learning resources (i.e. textbooks) but these are not prescribed.

Responsibility for the administration of elementary and secondary schools is delegated to local elected school boards or commissions. The boards set budgets, provide transportation, build and maintain schools, and hire and negotiate with teachers. The role of the school boards includes ensuring adherence to the provincial Programs of Study (curricula). School boards are accountable to the electorate in the region they serve and to the Minister of Learning for the effective allocation of education funds and for achieving provincial standards.

The Government of Canada plays an indirect role in education. It provides financial support for post-secondary education, labor market training, and the teaching of the two official languages - especially second-language training. In addition, it is responsible for the education of Aboriginal peoples, armed forces personnel and their dependents, and inmates of federal correctional facilities.

In general, Canadian children attend kindergarten for one or two years at the age of four or five on a voluntary basis. All children begin Grade One at about six years of age. Like in the U.S., grades are typically organized into elementary, middle and high schools. Secondary schools go up to Grades 11, 12 or 13, depending on the province. Education is free and all children are obligated to attend school until the age of 18.

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<sup>1</sup> Demographic data from Statistics Canada, 2001 Census.

## **Education Spending**

Canada as a whole is at the high end in spending on elementary and secondary education in the industrialized world, spending about 7 percent of its GDP on education. About 58 percent of the public funds spent on education go toward Canada's elementary and secondary schools. The remaining 42 percent are spent on the students attending Canada's community colleges and universities (1999). Per student spending averages \$7,382 CAD at the elementary and secondary levels, and for those at college and university levels, it is \$17,879 CAD(1998-99).

## **Elementary and Secondary Schools**

About five million children now attend public schools in Canada. In some provinces, children can enter kindergarten at the age of four before starting the elementary grades at age six. The elementary curriculum emphasizes the basic subjects of language, math, social studies, introductory arts and science.

In general, high school programs consist of two-three streams. The first prepares students for university, the second for post-secondary education at a community college or institute of technology, or for the workplace. There are also special programs for students unable to complete the conventional courses of study.

## **Other Schools**

Private elementary and secondary schools do exist in Canada and are sometimes elite institutions, but are typically small religious or specialty schools. Some provinces have legislation that permits the establishment of separate schools by religious groups. Mostly Roman Catholic, separate schools, which in 1995 accounted for about one-fourth of Canada's public school enrolment, offer a complete parochial curriculum from kindergarten through the secondary level in some provinces.

Private or independent schools have a current enrollment of over a quarter of a million students, and offer a great variety of curriculum options based on religion, language or academic status.

## **Teacher Training**

Canada's elementary and secondary education systems employ close to 300,000 full-time teachers. Their professional training generally includes at least four or five years of study (a Bachelor of Education degree normally requires university graduation plus one year of educational studies). Teachers are licensed by the provincial departments of education.

## **Provincial Testing**

Provincial testing programs, under various names and in numerous forms, have existed in Canada since the first public high schools. Examinations were used originally to identify students who were considered academically eligible for high school. Later, the examinations became tests of school leaving and were used to determine eligibility for high school graduation.

All provinces except Quebec and Newfoundland discontinued provincial examinations in the 1970s as Canada moved to increase local control and more and more educators claimed the examinations were damaging to instruction and learning. In most provinces, individual schools now set, conduct and grade their own examinations. However, in response to public concerns about the erosion of educational standards and demands for increased accountability, Alberta, British Columbia and Quebec reintroduced examinations in key subjects the 1980s. Studies of student performance by province show that the provinces with curriculum-based exams at the end of secondary schools out-perform students in other provinces.

Tests are typically tied to each provincial curriculum and measure the degree to which students have achieved specified provincial standards set by teachers, subject-area specialists, and provincial education officials. *Assessments* cover broad subject areas and monitor the overall education system. *Examinations* certify individuals' mastery of specific high school courses.

The Canadian provinces have not found it necessary to attach high stakes to all tests. In the case of high school examinations, scores are used only when combined with teacher-assigned grades to determine final grades (which in turn, help determine student placement, grade promotion, and post-secondary opportunities). The province wide assessments have no consequences for individual students and are used to monitor the system. The low-stakes environment helps ensure that instruction in the content areas targeted for assessment are not unduly emphasized at the expense of equally important content that is not.

Widespread teacher involvement is common in both writing test questions and serving on central grading panels. This involvement helps increase teachers' knowledge of curricula and instruction and aids in the development of tests that are compatible with good classroom instruction.

In most Canadian provinces, new tests are developed for each test administration. This diminishes the likelihood that teachers will focus their instruction on particular test items rather than on the content or skills that the items represent. Additionally, Canada is more likely to use diverse testing methods, whereas United States testing is often reliant on multiple-choice questions.

Most Canadian educators and the public support testing programs. The involvement of teachers in developing tests and in centralized grading activities appears to have increased the acceptance of the tests and their influence upon instruction. And the

introduction of SAIP (School Achievement Indicators Program)<sup>2</sup> has verified the success of both Alberta and British Columbia.<sup>3</sup> SAIP is a cyclical program of pan-Canadian assessments of student achievement in mathematics, reading and writing, and science that has been conducted by the Council of Ministers of Education, Canada since 1993.

It is important to note that provincial funding formulas, although independent of the testing programs, tend to level resources among schools within a province. Thus, in contrast to the United States, Canadian practices prevent the gross disparities in resources among districts that raise concerns regarding the equity of students' opportunities to learn the materials tested.

### **Student Performance on International Exams**

Canadian students place in the middle of the pack on international exams overall. Some Canadian provinces, however, have performed well. Alberta is third in science in grades 4 and 8 on the most recent TIMSS test, just behind Korea and Japan. Quebec is next and British Columbia followed close behind. On the last round of PISA, Canada was the top performing G-7 country in reading with Alberta students achieving the highest in the PISA 2000 reading assessment and within the top two in the PISA 2003 mathematics assessment. British Columbia was a top scorer as well, and Quebec did well in mathematics and science.

Another important note is that Ontario, while not at the top of provincial education performance, has shown progress in closing the achievement gap.

### **Post-Secondary Education**

Canada faces the challenge of increasing demand for advanced education. Data projections suggest that by 2013, 64 percent of all new jobs created in Canada will require some level of advanced education.

At the federal level, the premiers are expected to press Ottawa to design a dedicated transfer fund exclusively for higher education. Since 1995, that money has been lumped in with other cash transfers that also go to social spending. Figures from the AUCC show that tuition fees on average made up 32 percent of university operating revenue last year, while government funding was 61 percent. A decade earlier, tuition was 23 percent of operating revenue and government financing stood at 75 percent.

For most of Canada's history, post-secondary education was provided almost exclusively by its universities which are internationally known for the quality of their teaching and research. During the 1960s, however, as the demand for greater variety in post-secondary education rose sharply and enrollment grew, systems of publicly-operated, non-university education began to develop. Today in Canada, some 200 technical institutes and

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<sup>2</sup> Note: the Pan-Canadian Assessment Program (PCAP) will replace SAIP in 2007 in order to reduce the testing load of students. 13 year olds will be tested every 3 years. 16 year olds will have their test linked to PISA.

<sup>3</sup> In the SAIP science assessment 2004, Alberta was the only jurisdiction whose results were significantly higher than the Canadian results in both age groups that participated (ages 13 and 16).

community colleges complement about 100 universities, attracting a total post-secondary enrollment of approximately one million students.

Interestingly, a significant number of university graduates attend college upon completion of their degrees to acquire vocational skills for employment. University and college degree combination is appealing to many students because it offers the traditional credential plus a “saleable” skill.

### **Private Technical Education**

A technical/career college is a privately owned and operated school with the main objective of preparing students for the job market after a short period of instruction. The emphasis at technical/career colleges is on practical skills over a broad range of programs. They may specialize in specific areas such as business, computers and secretarial skills. Although privately owned, these schools are provincially approved and regulated, ensuring that program standards and quality are maintained.

### **Community Colleges**

The 175 post-secondary institutions are known by a range of titles, including Community College, Technical Institute, University College (and Cégep in Quebec). All of these institutions have the primary function of responding to the training needs of business, industry and the public service sectors. They also meet the educational needs of vocationally-oriented secondary school graduates, employment-seeking university graduates, as well as the lifelong learning requirements of the adult population. Reflecting changed and evolving community needs, more and more community colleges now grant bachelors and applied degrees.

The colleges deliver a wide range of shorter-term programs with a strong vocation focus, as well as general academic concentrations, often in regions that do not have the population base to support a full-service campus-based university. Colleges typically offer smaller classes, off-campus course offerings, a greater ratio of laboratory space to classroom space, an interactive teaching style and inclusive entry criteria.

Employment-related programs, including apprenticeship and continuing education courses, range from the technologies to the creative arts. Colleges maintain Centers of Excellence in many fields such as information technology, mining, the environment, and hospitality and tourism. They design curriculum and hands-on training for future participants in a skilled and specialized Canadian workforce.

### **University Colleges**

University Colleges combine Canadian university and college traditions, with a strong base of applied and academic programs offered in campus environments. As the name suggests, a university college offers university degrees as well as college diploma and certificate programs. Students can expect to find a wide range of program choices at university colleges, including English as a Second Language (ESL) programs.

## **Universities**

University entrance mainly depends on course selection and grades in high school; requirements vary from province to province. The main variation between the provinces, with respect to universities, is the amount of funding they receive. Universities in Quebec and British Columbia receive the most funding and have the lowest tuitions. Universities in the Maritimes generally receive the least funding and some, like Acadia University, are almost wholly reliant on private funding.

At present, there are no private universities in Canada that are accredited to teach courses in the humanities and the sciences without some sort of religious denomination, but this is set to change with the opening in 2006 of British Columbia's Sea to Sky University, the country's first private liberal arts university. Many provinces, including Ontario and Alberta, have passed legislation allowing private degree-granting institutions (not necessarily universities) to operate there.

Many Canadians remain polarized on the issue of permitting private universities to infiltrate the Canadian market; on the one hand, Canada's top universities cannot compete with the private American powerhouses because of funding, but on the other, the development of another "tier" of universities, where accessibility is based primarily on one's ability to pay, could prevent a significant portion of Canada's population from being able to attend these schools.

*The following case studies summarize lessons learned from visits to two provinces chosen for their performance on international student achievement exams: Alberta and British Columbia.*

## **ALBERTA**

Alberta is Canada's fourth most populous province, with a population of 3.1 million, more than half of whom live in the two major cities of Edmonton and Calgary. Between 1996 and 2001, Alberta's population surged by 10.2 percent, the largest growth of all the provinces. Immigration from abroad and, more importantly, from other provinces, brought more than 174,000 people to Alberta. Roughly three percent of the population in Alberta is Indigenous Canadian, 44 percent are of British descent; other large ethnic groups are German, Ukrainian, French, and Scandinavian.

A wealthy province with vast natural resources and the highest income per capita in Canada, Alberta faces high dropout rates of students many of whom are "pulled" into well-paying oil industry jobs before graduating high school. The system recognizes that one of its challenges is doing a better job of meeting the needs of students who are not university-bound. Its Business Plan 2004-2007 established a vision of being "the best learning system in the world."

Alberta has a highly centralized set of expected curricular outcomes and an aligned exam structure. Teachers are very involved in test preparation, and scoring, and therefore, are very supportive and knowledgeable of curricular expectations. Alberta provides 100 percent of funding for schools (no local resources are contributed to local education) which ensures equity across jurisdictions.

At a strategic level, the Ministry's role includes:

- Supporting planning and coordination throughout the development and implementation of curriculum, policies, regulations, legislation, and initiatives.
- Providing essential leadership, facilitating partnerships and working with stakeholders to optimize professional development activities and build capacity across the education system.
- Establishing and implementing the policy directions for the provincial government and the Minister of Learning.

The Ministry (known as Alberta Education) establishes and communicates learning expectations and provincial standards for student achievement and teacher certification. It supports implementation of programs and standards through the funding of the six Alberta Regional Professional Development Consortia, the publication of implementation guides for teachers, and the involvement of stakeholders in capacity building activities. It also ensures equity in education financing and assesses the results of schools and school boards across the province. Alberta Education monitors to ensure compliance with provincial policies and takes action when results are not achieved.

## **Curriculum**

### *K-6 Program of Study*

FINE ARTS Health, Drama, Music
HEALTH AND LIFE SKILLS
INFORMATION AND COMMUNICATION TECHNOLOGY
LANGUAGE LEARNING English, French, Native languages, other options
MATHEMATICS
PHYSICAL EDUCATION
SCIENCE
SOCIAL STUDIES

\*Starting in 2009, a second language will be mandatory in grades 4-9

### *Middle School Program of Study*

HEALTH AND LIFE SKILLS
LANGUAGE ARTS
MATHEMATICS
PHYSICAL EDUCATION
SCIENCE
SOCIAL STUDIES
CAREER AND TECHNOLOGY STUDIES (22 strands)
ENVIRONMENTAL AND OUTDOOR EDUCATION
FINE ARTS Art, Drama, Music
INFORMATION AND COMMUNICATION TECHNOLOGY
INTEGRATED OCCUPATIONAL PROGRAM
NATIVE LANGUAGES
RELIGIOUS OR ETHICAL STUDIES
SECOND LANGUAGES

\*Starting in 2009, a second language will be mandatory in grades 4-9

### *Senior High School Diploma Graduation Requirements (Minimum)*

100 credits including the following:
ENGLISH LANGUAGE ARTS – 30 LEVEL
SOCIAL STUDIES – 30 LEVEL
MATHEMATICS – 20 LEVEL
SCIENCE – 20 LEVEL
PHYSICAL EDUCATION 10
CAREER AND LIFE MANAGEMENT
10 CREDITS IN ANY COMBINATION FROM: Career and Technology Studies, Fine Arts, Second Languages, Physical Education, IOP Occupational cluster courses, Registered Apprenticeship Program trade courses
10 CREDITS IN ANY 30-LEVEL COURSE (not including those above)

To earn an Alberta High School Diploma, students successfully complete certain courses and earn a minimum of 100 credits. Approximately 50 credits are earned through required courses: English language arts, mathematics, science, social studies, physical education and career and life management.

Most students take three years, Grade 10 through Grade 12, to complete their senior high school program. Each year, students have access to 1000 hours of instruction. Many senior high schools offer courses in the semester system. In this system, a school might schedule a 5-credit course daily and a 3-credit course every other day for one semester.

The senior high school program is organized into courses of study for each subject area. Each course has a number, which usually designates the grade level as well as the level of difficulty. Students choose courses based on their past performance, their post-secondary aspirations, and the advice of guidance counselors. Students who opt for general courses (rather than academic courses) are typically provided opportunities to transfer into the academic sequence. Without transferring into the academic sequence, students cannot earn an Alberta High School Diploma, and will receive a Certificate of Achievement.

In particular, math and science course offerings include “pure” or “principle” (university track) and an “applied” (non-university) options. The applied courses use problem or project-based instruction with some examples taken from the workplace. However, schools have had problems filling applications classes because community colleges require both Applications of Math grades 11 and 12 for entry while still accepting only Principles of Math grade 11 alone. Alberta is currently leading a regional effort via the Western and Northern Canada Protocol to revise the applied math courses so that universities will accept them on an equal basis with pure mathematics courses.

For those grade 9 students who have marks that are close to, or slightly under, the pass mark of 50 percent, Alberta Education designed Math 10 Prep. Students who enroll in Math 10 Prep in semester one of 10<sup>th</sup> grade can then opt for Pure or Applied Math 10 in semester two. The Ministry recognized that students below grade level required a course that would address their individual needs with a focus on the mathematics skills and knowledge they lack from junior high school mathematics, or earlier.

In Math 10 Prep students are required to demonstrate effective communication skills. When accomplishing program outcomes, students are expected to explain, to illustrate, to reason and to make connections. Multiple solution strategies to problems and problem contexts are expected as students work through routine and non-routine problems. Technology is an integral part of this mathematics program. Calculators and computer programs are used to enhance conceptual understanding and to facilitate higher order thinking through exploration, modeling and problem solving.

### **Curriculum Development**

The curriculum itself is relatively fluid in the name of continuous improvement. But the Alberta curriculum development process is stable and designed to be transparent, collaborative, and open to all stakeholders. Parents are demonstrating more and more

interest in student coursework and its implications for post-secondary. Alberta recently released curriculum handbooks for parents that have been very well received (the handbooks are organized by grade level, except for senior high school where individual courses are described).

There has been a new effort to weave aboriginal perspectives into the curriculum. Beginning in 1997, Alberta Education started having First Nations (aboriginal) voices at curriculum development meetings from the beginning. This represented a new cultural awareness and changed way of thinking. Alberta's social studies courses are now well integrated and are considered an international model. Math, science, and ELA are now being revised with First Nations input.

Alberta is leading a new effort to develop Knowledge and Employability Courses (subject-based, including occupational areas) to replace the Integrated Occupational Program for grades 8-12. These courses are designed to be more hands-on for students. The intention is to place students struggling in particular subject areas (not as a full course load) with flexibility for getting back on track towards earning a diploma. Alberta Education is working to define parameters around student placement criteria, including assessments and parent sign-offs. There is some concern that schools may simply place all their special education students or those with behavior issues into these courses, which is not the intent.

### **Grade 12 Diploma Testing**

The purpose of the Diploma Examinations program is to:

- Certify the level of individual student achievement in selected grade 12 courses
- Ensure that province-wide standards of achievement are maintained
- Report individual and group results for the purpose of improving student learning

Provincial diploma examinations are a required part of the following courses:

- Applied Mathematics 30
- Biology 30
- Chemistry 30
- English 30-1
- English 30-2
- Francais 30 (Francophone – French first language)
- French Language Arts 30
- Physics 30
- Pure Mathematics 30
- Science 30
- Social Studies 30
- Social Studies 33

For each examination course, a panel of Alberta Education Learner Assessment Branch staff, classroom teachers, schools and school authorities and post-secondary representatives reviews the provincial course curriculum to draw up examination

specifications. By having teachers and specialists involved in designing the exam specifications, blueprints, test design, weighting formulas, etc. consensus is built and the teachers see the exams as valid. Teachers are also hired to write items based on the specifications.<sup>4</sup>

All exams are scored centrally. The Ministry employs two former classroom teachers per course (x 12 courses) to manage the examination scoring process. In addition to these two employees, approximately seven to ten teacher markers are brought in for 3-5 days to score the written-response parts of the course examinations.

Scores over the 50 percent mark are considered “acceptable” and those over 80 percent are considered “excellent.” Examinations count for 50 percent of the student’s final course grade (the other 50 percent being coursework). Alberta Education releases reports at the provincial level, the school authority level, the school level, and the class level for each course examination. Due to privacy concerns, disaggregated data on subgroup performance is not made publicly available. However, a school can access its own disaggregated data for teaching purposes.

Students can repeat a course and/or rewrite an examination. A students’ highest school mark, examination mark, and final mark are used for transcripts.

In the past, Alberta placed a priority on the content validity of the exams at the expense of comparability of exam scores. This is changing with the new effort by the Ministry to maintain the consistency of standard over time (known as the MCSOT initiative). Test items are now equated in terms of difficulty so that test scores can be compared year to year, and progress can be measured.

### **Provincial Assessment Tests**

Provincial achievement testing was introduced in Alberta in 1982, in response to public demand for greater consistency in standards across the classrooms of the province, and because of concern about declining student achievement. This testing program is part of the province’s overall accountability model. It provides important information to teachers, students, and parents and helps to ensure that Alberta’s students are receiving a high quality education. It is not high stakes for the students.

The purposes of the Achievement Testing Program are to:

- Determine if students are learning what they are expected to learn
- Report to Albertans how well students have achieved provincial standards at given points in their schooling

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<sup>4</sup> Those selected must hold a permanent teaching certificate, be teaching the exam course at that time, and have at least two years’ experience doing so. Teachers apply to local superintendents, who nominate candidates to the provincial education department. The department selects teachers with leadership skills who represent the general demographic characteristics of the provincial population. A balance is sought between teachers who have had previous item-writing experience and those who have not. The provincial education department pays the selected teachers \$200 CAD/day.

- Assist schools, jurisdictions, and the province in monitoring and improving student learning

The tests are administered annually in May–June to students in the following subjects:

<u>Grade 3</u>	<u>Grade 6 and Grade 9</u>
Mathematics	Mathematics
ELA	Science Social studies ELA, and French language arts

Provincial achievement tests are only one tool parents, teachers, school authorities and government can use to assess student performance. To support teachers in classroom assessment, the department has developed supplemental assessment materials for teachers' discretionary use in their classrooms – e.g., the Diagnostic Reading Program (DRP), the Diagnostic Mathematics Program (DMP), and the Classroom Assessment Materials Project (CAMP) resources. In addition, teachers assess students using other means, such as teacher-made tests, student assignments, and commercially based tests, and a number of jurisdictions have implemented portfolio assessment, often linked to career preparation through such programs as Tech Prep. Together, these provide a comprehensive picture of student achievement.

### **Test Administration and Scoring**

Teachers administer the achievement tests in their classrooms, based on instructions provided by Alberta Education. The language arts tests include a written-response component, as well as a machine-scored part. The other achievement tests include only machine-scored questions.

Scoring materials are provided to schools for the teachers to use in marking the tests locally, if they wish to do so, prior to submitting them for central marking. A teacher may use the local mark as part of a student's final mark in the course. Local marking helps teachers become intimate with the rubrics, the curriculum, and the marking standards. Alberta Education encourages local marking and has found that almost all teachers do score their students' tests, but only 40-50 percent submit the results to Alberta Education.

In July, written-response sections of the language arts tests – constituting half of the test - - are marked centrally by classroom teachers who have been nominated by their superintendents. These teachers must have taught the course within the last three years; hold a valid Alberta teaching certificate; and be employed by a school authority at the time of marking.

Superintendents and school principals have electronic access to the detailed jurisdiction and school reports through a secured extranet site. Individual student profiles are sent out to the schools in September.

### **Teachers/Union Role**

The teachers in Alberta are highly paid (the highest in Canada). First year teachers earn an estimated \$53,000 (CAD); experienced teachers may earn \$75,000 (CAD).

The Alberta Teachers Association (ATA) has a strong presence in Alberta, but does not engage in the political battles to the level that the British Columbia teachers union does. Interestingly, while teachers support the graduation examinations, ATA has not been particularly supportive of achievement testing. It seems that some teachers feel grade 3 is too early to test achievement levels; others feel the testing is costly or is not measuring valid outcomes.

### **Accountability**

From 1981 through to 1994 school authorities were supported by department regional offices, which provided various services such as implementation support through trained lead teachers, as well as subject specialists. In 1994 a “hands-off” model was implemented in which school authorities took responsibility for implementation of provincial curricula, programs, and policies. This was more cost efficient but many school authorities struggled with the new expectation and expressed concerns about a lack of support. New curriculum was not implemented in a consistent manner across the province. The model did not prove effective.

In 1995, the Alberta Regional Consortia was established to provide professional development opportunities for jurisdictions. With the ministry providing infrastructure funding, the districts and school boards together hire an executive director and small staff to oversee each region. The role of the consortia is to plan professional development, which typically is tied to rollout of new curriculum from Alberta Education. The consortia charge districts a fee to send teachers to professional development. The districts provide travel and release time for teachers.

In Spring 2000 the Basic Learning Division was reorganized into a matrix organization structure, enabling more effective communication with the field and has strengthened responsiveness to emergent needs. These changes have provided greater consistency across the province and have results in a shared responsibility for implementation of curricula, programs, and policies.

“Priority” schools (their version of schools in need of improvement) are closely monitored; tend to be the rural and isolated schools that fall into this category. Provincial grade 3, 6, 9 testing is usually the best indicator of which schools are lagging. Field service managers within Alberta Education develop three-year plans with schools/districts. Taking these provincial priorities into account, each school and jurisdiction creates an annual education plan that outlines goals, the methods to achieve those goals and the measures that will determine if the goals have been achieved. It is mostly a District responsibility to motivate and support struggling schools.

One method for helping Districts fund and support schools is the AISI project. Alberta Education has invested \$70 million CAD/year – or about \$121 per student – into AISI

since 1999. The goal is to support district/school projects designed to boost student achievement. The projects vary in their approach, but many support the effective use of data, teacher professional development, professional learning communities, mentor teachers, and other research-based practices.

### **Post-Secondary**

There are twenty-one public institutions in Alberta: universities, colleges and institutes. Universities offer the vast majority of degree programs, whereas colleges and technical institutes generally focus on applied degree, diploma, trade certificate and certificate programs. There are currently eight private providers authorized to offer degree programs in select disciplines, such as arts, science and education. Seven of the eight (all of which are non-profit) receive ongoing operating grants from Alberta Advanced Education. This funding arrangement was part of the Alberta government's overall strategy to expand degree access to meet the needs of a rapidly growing population.

Alberta Advanced Education's primary funding responsibility is to provide public institutions with ongoing operating grants. Students contribute 28 percent of total post-secondary costs (average tuition was \$4,804 CAD in 2004-05).

The Alberta Council on Admissions and Transfers (ACAT) encourages negotiations among institutions with the goal of expanding educational opportunities for Alberta students.

Only 32 percent of grade 10 Alberta students enter advanced education within four years. That number goes up to 51 percent within six years. Overall, Alberta's total advanced education participation rate (college and university enrollments combined) was 31 percent in 2004, below the national average of 38.2 percent, and the second lowest rate after Saskatchewan.<sup>5</sup> This is a challenge for the province as over the long-term Alberta's productivity and economic strength will be increasingly reliant on an educated and knowledgeable workforce.

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<sup>5</sup> Alberta Learning, Annual Report 2003/2004.

## **BRITISH COLUMBIA**

With over 4 million inhabitants, British Columbia is Canada's third largest province. British Columbia leads the country in job creation with economic growth fuelled by strong wood-product manufacturing, continued strong housing construction, and robust consumer spending.

And British Columbia is seen as a major gateway for Pacific immigration. In 2001, one-quarter of British Columbians were immigrants, over half of whom had been born in Asia. In metropolitan Vancouver, 37% of the population were minorities, almost half of them of Chinese origin.

While this diversity is part of British Columbia's heritage, the province does face the challenge of assimilating an ever-growing number of youth and adults for whom English is a Second Language. BC's ability to infuse a multicultural emphasis in its schools – at least those in the big cities – is impressive. Schools seem to maintain a cohesive environment thanks to teacher training programs which instill in teachers a sense of cultural awareness and respect for diversity.

A February 2005 "Speech from the Throne" laid out a bold vision: make British Columbia "the best educated, most literate jurisdiction on the continent" by 2010. And while British Columbia students are among the best in the world in math, reading and science -- according to results from the 2003 PISA -- many adults have literacy challenges.

The province increased education funding for the 2005-06 school year by \$150 million – to more than \$4.025 billion CAD annually – the largest single increase in funding for BC schools in a decade. British Columbia provides 80 percent of funding for schools (with local resources making up 20 percent of the contribution to local education).

Dr. Emery Dosdall is the Deputy Minister for the British Columbia Ministry of Education, which is responsible for funding, setting standards and monitoring the educational performance of more than 680,000 students from Kindergarten to Grade 12. Dr. Dosdall came to the Ministry from Edmonton Public Schools where he was the district's Superintendent from 1995 to 2001. Dr. Dosdall has led a new charge focusing on what he calls "3As and a C" – Achievement, for all students, autonomy, and school choice.

Like Alberta, British Columbia has a centralized set of expected curricular outcomes and a highly aligned exam structure. Teachers are very involved in test preparation, and scoring, and therefore, are very supportive and knowledgeable of curricular expectations.

## **Curriculum**

### *Elementary School (K-Grade 7) Program of Study*

ENGLISH LANGUAGE ARTS, OR FRENCH LANGUAGE ARTS,
SOCIAL STUDIES
SECOND LANGUAGE*
MATHEMATICS
SCIENCE
PHYSICAL EDUCATION
FINE ARTS
PERSONAL PLANNING

\*This is a requirement for grades 5-7

### *Middle School (Grades 8 to 9) Program of Study*

ENGLISH LANGUAGE ARTS OR FRENCH LANGUAGE ARTS
SOCIAL STUDIES
MATHEMATICS
SCIENCE
PHYSICAL EDUCATION
FINE ARTS:
Dance, Drama, Music, or Visual Arts
APPLIED SKILLS:
Technology Education, Information Technology, Home Economics, or Business Education
HEALTH AND CAREER EDUCATION

### *Senior High School Dogwood Diploma Graduation Requirements (Minimum)*

80 credits including the following 48 required credits:
LANGUAGE ARTS 10
LANGUAGE ARTS 11*
LANGUAGE ARTS 12*
SOCIAL STUDIES 10
SOCIAL STUDIES 11, CANADIAN CIVICS 11 OR BC FIRST NATION STUDIES 12
SCIENCE 10
SCIENCE 11 OR 12*
MATHEMATICS 10*
MATHEMATICS 11 OR 12*
PHYSICAL EDUCATION 10
FINE ARTS AND/OR APPLIED SKILLS 10, 11, OR 12
PLANNING 10
Students must also:
COMPLETE GRADUATION PORTFOLIO ASSESSMENT
COMPLETE 28 ELECTIVE CREDITS

\*One from a number of course options. See next page for Mathematics pathway options.

Students interested in pursuing scientific studies typically take biology, chemistry and physics within last two years of high school.

**THREE MATHEMATICS PATHWAYS** The mathematics curriculum for Grades 10 to 12 offers students a choice of routes through the different mathematics courses offered. Although each student's exact route will depend on a variety of factors, there are three main pathways: Applications of Mathematics, Essentials of Mathematics, and Principles of Mathematics (plus Calculus 12).

The *Applications of Mathematics pathway* provides a practical, contextual focus that encourages students to develop their mathematical knowledge, skills, and attitudes in the context of their lives and possible careers. The instructional approaches used to develop the required mathematical concepts emphasize concrete activities and modeling, with less emphasis on symbol manipulation. When needed, students should have access to technology that extends their basic skills and knowledge and allows them to repeatedly investigate and model mathematical concepts and issues.

Students from the Applications of Mathematics pathway will be well prepared for many post-secondary programs that do not require calculus as part of the program of studies. The breadth of the Applications of Mathematics curriculum is intended to prepare students for entrance into many certificate programs, diploma programs, continuing education programs, trades programs, technical programs, and some degree programs.

In order to meet the challenges of society, high school graduates must be numerate. Students following the *Essentials of Mathematics pathway* will have opportunities to improve their numeracy skills and concepts. Developing a sense of numeracy will help them to understand how mathematical concepts permeate daily life, business, industry, and government. Students need to be able to use mathematics not just in their work lives, but in their personal lives as citizens and consumers. It is intended that students will learn to value mathematics and become confident in their mathematical abilities.

Students following the *Principles of Mathematics pathway* will spend more time developing their understanding of symbol manipulation and of generalizations of more sophisticated mathematical concepts. Although there is an increased focus in this pathway on the applications of mathematics, one of the primary purposes of Principles of Mathematics will be to develop the formalism students will need to continue on with the study of calculus.

Both Applications of Mathematics 12 and Principles of Mathematics 12 have a provincial exam component. Students who successfully complete Applications of Mathematics 11, Essentials of Mathematics 11, or Principles of Mathematics 11 will meet British Columbia's graduation requirements.

*Calculus 12* is intended for students who have completed (or are concurrently taking) Principles of Mathematics 12 or who have completed an equivalent college preparatory course that includes algebra, geometry, and trigonometry.

AP courses can substitute for provincial courses required to enter university, much like in the U.S. AP courses are widely available and student participation is high. Interestingly, BC is only place worldwide where students taking the AP exams score more 5s than 4s, and more 4s than 3s.

### **Graduation Examinations**

British Columbia's Graduation Program includes grades 10, 11, and 12. Courses numbered 10, 11 and 12 earn credits toward graduation. To graduate, students must complete a minimum of 80 credits over the three-year Graduation Program.

Five graduation exams in Grades 10-12 are required: Grade 10 Language Arts, Grade 10 Science, Grade 10 Mathematics, Social Studies exam attached to the required Grade 11 or 12 course taken, and Grade 12 Language Arts exam attached to the required course taken. Some post-secondary institutions may require Grade 12 exams in other subjects than Language Arts for entrance. However, the students do not need to sit for the exam in that course in order to earn a high school diploma.

In grade 10-11 exams, classroom assessment counts for 80 percent of students' final grades, and the exam counts for 20 percent. In grade 12 exams, classroom assessment counts for 60 percent, with the exam counting 40 percent.

Grade 10-11 exams are marked locally which BC officials emphasized as being very important to maintaining teacher support. The Ministry provides teacher training on marking procedures to every district at no cost and offers teacher support via the Internet, fax, and phone. To monitor and assure consistency, the Ministry selects papers graded by local teachers for occasional review. It trains and pays BC teachers to conduct the reviews; these teachers then act as train the trainers for their peers.

Grade 12 exams are scored centrally, except for the Language Arts test. Students have more than one opportunity to write the exam. In fact, there are five exam sessions a year, giving students plenty of opportunities to retake the test.

The Graduation Portfolio is a new requirement (in its second year of implementation). It is a paper-based or electronic collection of students' work or other records of achievement. Portfolio assembly begins in Grade 10, with specific support and guidance provided as part of the course Planning 10, and focuses on:

- Information technology
- Community involvement and responsibility
- Personal health
- Employability skills
- Education and career planning, and
- Art and design.

Each of the key areas in the portfolio is assessed against a provincial standard and evaluated by a panel. Postsecondary institutions have expressed an interest in considering the portfolio for admissions but have made no commitments to do so yet.

## **Provincial Testing**

The Ministry manages an assessment program that systematically gathers information from a variety of sources to determine the extent to which BC students are achieving the knowledge, skills and understanding prescribed in the provincial curriculum. In addition to national and international assessments, BC students participate in three types of assessments:

- Foundation Skills Assessment (FSA)
- Provincial Learning Assessment
- Grade 10-12 Provincial Examination

The FSA is administered annually to all BC students in grades 4 and 7. It tests student ability in Reading Comprehension, Writing and Numeracy. Like in Alberta, there are no stakes for students in terms of promotion to the next grade. Student scores are shared with parents, but schools are not held accountable for individual student performance.

The Provincial Learning Assessments are administered to students in grades 4, 7 and 10 on a sample basis, as needed. These cover the subjects or cross-curricular areas not covered by FSA: Reading Comprehension and First-draft Writing; Mathematics and Science; Communication Skills; and Social Studies. The results of the first-ever Grade 10 provincial exams written in January 2005 show that most BC students are meeting or exceeding provincial standards and are on track to graduate.

As in Alberta, the teachers are very involved in the development of the assessments (that reflect provincial curriculum). The Ministry believes that when teachers “muck around with the rubric” they build local ownership of, and support for, the curriculum and the tests.

## **Teachers/Union Role**

Those wishing to enter the teaching profession can either major in a subject area and add teacher certification (which is a yearlong program) or they can pursue teaching directly. They must be qualified to join the BC Teachers Federation in order to teach in schools. Secondary teachers (particularly in the upper grades) are considered to be highly knowledgeable in their fields.

## **The Use of Data**

Like Alberta, British Columbia aligns provincial standards with curriculum and assessments. BC is also the only province to disaggregate its data. For the past ten years, BC has looked at student performance data in subgroups that include gender, aboriginal population, ESL, and special-ed<sup>6</sup>. The Ministry investment in the data warehouse infrastructure (estimated at \$10 million CAD in the last 5 years) has helped instill a new emphasis on outcomes attained. High school completion rates<sup>7</sup> have risen from 76

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<sup>6</sup> Note: the proxy for ethnicity is language spoken at home, the proxy for socioeconomic status is the student's postal code.

<sup>7</sup> Completion rates are determined by tracking the number of students who obtain a graduation certificate within six years of entering Grade 8 for the first time.

percent to 79 percent in the past five years. Completion rates are on the rise within subgroups as well.

The Ministry has established a common, web-based information management system that districts voluntarily elect to use. There are incentives to participate including: a low per student fee, access to an extensive database, easy tracking of students entering/exiting the school or district, and the ability to generate data reports for management, accountability and instructional purposes. So far, 50 out of 61 districts have signed up (reaching one-fifth of BC students).

In addition to the data collection mechanisms, BC is tagging each incoming student with a personal ID number so that student can be tracked throughout his/her educational career. Right now it's contained within the K-12 system, but there are plans to extend the IDs into alternative and postsecondary education. Since only about two percent of students arrive from other provinces, there is no great need to extend the system beyond BC.

### **The Accountability Framework**

British Columbia developed its Accountability Framework in the spring of 2002. Produced collaboratively with educational partners, the Accountability Framework has four components:

1. School plans developed by School Planning Councils<sup>8</sup> annually
2. District Accountability Contracts with the Ministry based on school plans
3. Aboriginal Enhancement Agreements<sup>9</sup>
4. District reviews

The expectation is that classroom, school, district and provincial data are used to make decisions relating to improving achievement, with a focus on the most challenged schools and groups of students. The contracts are made public to the community.

The purpose of District Reviews is to provide feedback and recommendations to school districts, the Minister of education, and the public regarding district effort to improve student achievement. Each year, the ministry conducts reviews of district/school progress. One-third of the 60 districts are visited by a review team made up of ministry staff and outside superintendents, principals, teachers, and parents. One-third of the districts are visited by Dr. Dosdall in person. And one-third have no follow-up.

District reviews focus on a research-based “10 points of appreciative inquiry” to assess district improvement. The 10 points include:

1. Goals

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<sup>8</sup> These councils include three parents, a teacher and the principal, and in schools that have grades 10-12, a student. School Planning Councils were created in 2002 to give parents a greater role in the decisions that affect their children's education.

<sup>9</sup> Aboriginal Education Enhancement Agreements identify goals and establish targets focusing on Aboriginal student achievement. One-third of BC school districts have enhancement agreements in place, with a ministry goal to have all 60 signed by June 2007.

2. Rationale
3. Data
4. Strategies
5. Structures
6. Results
7. Communication
8. Teamwork: district and school coherence
9. Teamwork: district and parent involvement
10. Leadership

The District Review evaluates districts in each category as “meeting expectations,” “approaching expectations,” or “not yet.” Districts are expected to respond to review recommendations by outlining their proposed actions to the Deputy Minister<sup>10</sup>. District actions are also reflected in subsequent school plans and Accountability Contracts. Responses to the review process include: reorganization of district staff and planning processes to address student needs; hiring of literacy and resource staff; reduction of class size in more challenged schools; improved two-way communications with parents and enhanced parental involvement; and development of enrichment programs for gifted students.

Capacity building is supported in the province by extensive regional training sessions – typically led by the BC Teachers Federation, not by the Ministry -- and the establishment of networks in specific areas (i.e. literacy). Yet no additional funds are made available to low performing schools. Better performing schools are often called on to help the low performers. And recently three highly regarded superintendents were hired by the Ministry to provide technical assistance to districts that need support. Districts may also request a “special advisor” placed by the Ministry and paid for by the District if more help is needed.

Only in extreme circumstances (ex: financial mismanagement) is the school board dismissed with the Ministry appointing someone to manage the school. Data collected at the student level shows that the lowest performing groups of students are improving significantly, and annual ministry surveys indicate satisfaction among students, parents and staff is high.

### **Autonomy**

BC aims to give local school boards more autonomy and control over the delivery of education services, subject to provincial curriculum and testing standards. Districts and schools are encouraged to take charge of their budgets and to make decisions that impact the bottom line.

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<sup>10</sup> Out of 200 staff in the Ministry, we were told that accountability is the responsibility of one person: the Director of Liaison.

## **School Choice**

School choice is encouraged in BC, with school districts offering nearly 5,000 choices, including community, neighborhood and traditional schools, aboriginal education programs, French immersion, special needs services, pre-school, distributed learning, and programs in technology, fine arts, dance, sports and trades. Students can go to any school as long as there is room and the funding follows the student.

The percentage of provincial funding -- ranging from 30 percent to 100 percent -- awarded to independent schools (i.e. religious) depends on their adherence to provincial curriculum and assessment procedures, as well as the proportion of teachers in the union. An estimated 10 percent of students attend the province's 348 independent schools – and the population is growing.

## **Post-Secondary**

British Columbia boasts the second highest total advanced education participation rate in Canada, at 40.2 percent. The public post-secondary education system in British Columbia encompasses about almost three dozen autonomous public and private institutions, including community colleges, institutes, university colleges, and universities.

BC's first college was established in 1964 with a focus on providing a two-year entry into university. This tradition continues today with colleges being the most likely entry point for high school graduates due to the high level of competition for university seats and the fact that colleges offer lower tuition and smaller class size than universities.

BC is considered to have the best articulation and transfer system in the world – modeled after California. Colleges and universities have an elaborate set of agreements articulating credit transfer among institutions, as well as credits earned for senior high school coursework. The British Columbia Council on Admissions and Transfer (BCCAT) was established in 1989 by the Ministry of Advanced Education. The BCCAT is Ministry-funded but independently run. To improve student transfer and mobility among institutions, 70 articulation committees (organized by program of study) help coordinate transfer routes to promote completion of baccalaureate degrees.

Studies show that of students who continued their studies at a BC public post-secondary institution after leaving a BC college, university college, institute or agency, 71 percent transferred to a different institution, and of those, 65 percent went to a university. And BC college transfer students entering the three largest BC universities receive credit for 85 percent of the credits they earn at college.<sup>11</sup> Further, there is evidence that two-year transfer students are as successful at the university level as those admitted directly into four-year university programs (despite the stiff competition to earn university admittance).

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<sup>11</sup> BCCAT 2000-01 Annual Report.

## WHERE WE NEED TO KNOW MORE: K12

- Teacher preparation programs
- School administrator preparation programs
- What do low-performing high schools look like?
- What is the performance of students from disadvantaged/poor backgrounds?
- The perspective from a district/school on how effective the system is
- More on Alberta's Knowledge and Employability (applied) courses
- More on curriculum rigor/topics of study
- The employer perspective on the K12 system