



## 2

# PISA-15, YITS, PISA-24, and the Canadian Context

This chapter describes the three data sources used to explore learning gains and gives an overview of the Programme for International Student Assessment (PISA) in Canada and the linked longitudinal Youth in Transition Survey (YITS). It also provides a detailed description of PISA-24 and related data-quality issues, and a concise review of Canada's education systems.



Canada was one of the 28 OECD member countries that participated in the initial Programme for International Student Assessment (PISA) survey in 2000 (PISA-15). To enhance the value of PISA's internationally comparable data, it developed a longitudinal survey, the Youth in Transition Survey (YITS), which followed the students who participated in PISA-15 through to their young adulthood. Data on education and labour-market outcomes were collected every two years. This allowed for an analysis of how the competencies acquired by the time the students were 15 years old influenced subsequent education and work pathways. The link between cognitive ability at age 15 and educational attainment has been documented in the report, *Pathways to Success* (OECD, 2010a).

While *Pathways to Success* showed that PISA reading scores are closely associated with educational outcomes, it was not possible to directly measure learning gains after the age of 15. Indeed, it was not clear whether reading proficiency continued to improve after compulsory education. Information on reading proficiency collected at age 24 would add to an understanding of the key factors affecting learning gains after compulsory education.

This chapter provides a brief overview of PISA and YITS and offers more detailed information on the PISA re-assessment (PISA-24) conducted at age 24. The chapter ends with a brief overview of the Canadian education systems. Annex A provides more detail on the technical challenges of using the PISA-15 and PISA-24 assessments to study skills development, including ceiling effects, measurement error and regression towards the mean.

## THE PROGRAMME FOR INTERNATIONAL STUDENT ASSESSMENT (PISA): AN OVERVIEW

The Programme for International Student Assessment (PISA) assesses the extent to which students near the end of compulsory education have acquired some of the knowledge and skills that are essential for full participation in modern societies, with a focus on reading, mathematics and science. PISA seeks to assess not merely whether 15-year-old students can reproduce knowledge, but also to examine how well they can extrapolate from what they have learned and apply it in unfamiliar settings, both in and outside of school. In addition to data on student achievement in the three key domains of reading, mathematics and science, PISA also collects information on individual, family and school characteristics that may be associated with student performance.

PISA has been conducted every three years since 2000; in 2009, 75 countries and economies participated in the international assessment. Decisions about the scope and nature of the PISA assessments and the background information to be collected are made by leading experts in participating countries. Stringent quality-assurance mechanisms are applied in designing the test, in translation, sampling and data collection. As a result, PISA data have high validity and reliability. Although originally created by OECD countries, PISA has become a major assessment tool in many regions around the world. This study uses data from PISA-15, which focused on student achievement in reading. To supplement the PISA scores, separate questionnaires were also distributed to students, principals and students' parents.

### Reading proficiency in PISA-15

In PISA-15, reading literacy is defined as the ability to understand, use and reflect on written texts in order to achieve one's goals, to develop one's knowledge and skills, and to participate effectively in society. This definition goes well beyond the notion of reading as simply decoding or literal comprehension; it includes the value of reading proficiency in the real world.

Some 141 questions were used in the 2000 assessment of reading. Performance on three subscales (retrieving information, interpreting texts, and reflecting on and evaluating texts) was also assessed (OECD, 2001). Scales were developed based on a hierarchy of tasks, from simple retrieval of information to higher-order analytical thinking. In this report, the five proficiency levels developed for PISA-15, based on the hierarchy of tasks, are linked to the tasks demanded of young adults in their daily lives. Figure 2.1 describes in detail what the proficiency levels measure. These proficiency levels were developed to describe skills at age 15, thus they provide an approximation of skills at age 24.

The relevance of the knowledge and skills measured by PISA is confirmed by studies tracking young people in the years after they have been assessed by PISA. Longitudinal studies in Australia, Canada and Switzerland show a strong relationship between performance in reading on the PISA assessment at age 15 and future educational attainment and success in the labour market.<sup>1</sup>



■ Figure 2.1 ■

**PISA-15: What the proficiency levels measure**

|   | <b>Retrieving Information</b>  | <b>Interpreting texts</b>  | <b>Reflecting and evaluating</b>  |
|---|--|--|---|
| <b>What is being assessed on each of the reading performance scales:</b>  |  |  |   |
|   | Retrieving information is defined as locating one or more pieces of information in a text.   | Interpreting texts is defined as constructing meaning and drawing inferences from one or more parts of a text.   | Reflecting and evaluating is defined as relating a text to one's experience, knowledge and ideas.   |
| <b>Characteristics of the task associated with increasing difficulty on each of the reading performance scales:</b> |  |  |   |
|   | Task difficulty depends on the number of pieces of information that need to be located. Difficulty also depends on the number of conditions that must be met to locate the requested information, and on whether what is retrieved needs to be sequenced in a particular way. Difficulty also depends on the prominence of information, and the familiarity of the context. Other relevant characteristics are the complexity of the text, and the presence and strength of competing information. | Task difficulty depends on the type of interpretation required, with the easiest tasks requiring identifying the main idea in a text, more difficult tasks requiring understanding relationships that are part of the text, and the most difficult requiring either an understanding of the meaning of language in context, or analogical reasoning. Difficulty also depends on how explicitly the text provides the ideas or information the reader needs in order to complete the task; on how prominent the required information is; and on how much competing information is present. Finally, the length and complexity of the text and the familiarity of its content affect difficulty. | Task difficulty depends on the type of reflection required, with the easiest tasks requiring simple connections or explanations relating the text to external experience, and the more difficult requiring an hypothesis or evaluation. Difficulty also depends on the familiarity of the knowledge that must be drawn on from outside the text; on the complexity of the text; on the level of textual understanding demanded; and on how explicitly the reader is directed to relevant factors in both the task and the text. |
| <b>Level</b>  |  |  |   |
| <b>5</b>  | Locate and possibly sequence or combine multiple pieces of deeply embedded information, some of which may be outside the main body of the text. Infer which information in the text is relevant to the task. Deal with highly plausible and/or extensive competing information.  | Either construe the meaning of nuanced language or demonstrate a full and detailed understanding of a text.  | Critically evaluate or hypothesise, drawing on specialised knowledge. Deal with concepts that are contrary to expectations and draw on a deep understanding of long or complex texts.   |
| <b>4</b>  | Locate and possibly sequence or combine multiple pieces of embedded information, each of which may need to meet multiple criteria, in a text with unfamiliar context or form. Infer which information in the text is relevant to the task.   | Use a high level of text-based inference to understand and apply categories in an unfamiliar context, and to construe the meaning of a section of text by taking into account the text as a whole. Deal with ambiguities, ideas that are contrary to expectation and ideas that are negatively worded.   | Use formal or public knowledge to hypothesise about or critically evaluate a text. Show accurate understanding of long or complex texts.  |
| <b>3</b>  | Locate and, in some cases, recognise the relationship between pieces of information, each of which may need to meet multiple criteria. Deal with prominent competing information.  | Integrate several parts of a text in order to identify a main idea, understand a relationship or construe the meaning of a word or phrase. Compare, contrast or categorise taking many criteria into account. Deal with competing information.   | Make connections or comparisons, give explanations, or evaluate a feature of text. Demonstrate a detailed understanding of the text in relation to familiar, everyday knowledge, or draw on less common knowledge.  |
| <b>2</b>  | Locate one or more pieces of information, each of which may be required to meet multiple criteria. Deal with competing information.  | Identify the main idea in a text, understand relationships, form or apply simple categories, or construe meaning within a limited part of the text when the information is not prominent and low-level inferences are required.  | Make a comparison or connections between the text and outside knowledge, or explain a feature of the text by drawing on personal experience and attitudes.  |
| <b>1</b>  | Take account of a single criterion to locate one or more independent pieces of explicitly stated information.  | Recognise the main theme or author's purpose in a text about a familiar topic, when the required information in the text is prominent.   | Make a simple connection between information in the text and common, everyday knowledge.  |

Source: OECD (2001).



## Canada's administration of PISA-15

Because it is a bilingual country, Canada conducted the PISA-15 assessment in both English and French. In addition, since it would be important to report the performance of students in each of the 10 provincial education systems, the sample size was increased to 30 000 students from the 5 000 that most countries assessed. Such a large sample allowed for more detailed analysis of the performance of subgroups, such as boys, girls, and first- and second-generation immigrants, and provided a sufficient sample for a longitudinal follow-up study. A questionnaire was also addressed to parents to elicit more background information on the family and the student (see Box 2.1).

### Box 2.1 Key features of PISA-15 in Canada

Canada tailored the administration of the PISA-15 survey to ensure that the data collected offered a rich source for analysis.

- 29 687 15-year-old students in 1 242 schools participated in PISA-15, in comparison to the 5 000 students surveyed in most participating countries.
- Assessments were conducted in two languages: English and French.
- An additional questionnaire, addressed to parents, collected more background information on the family and the student.
- Information was collected for the Youth in Transition longitudinal survey that would follow the students to age 24.

## YOUTH IN TRANSITION (YITS): AN OVERVIEW

The main goal of the Youth in Transition Survey (YITS) was to develop evidence to support policies to improve the education and labour-market outcomes of Canadian youth, and ultimately to help ensure Canada's continued prosperity.

Figure 2.2 shows the data-collection cycles of YITS for students who participated in PISA-15, and highlights the timing of the PISA-24 2009 re-assessment.<sup>2</sup>

■ Figure 2.2 ■

### Overview of data collection in Canada: PISA-15, YITS and PISA-24

|         |         | 2000   | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|---------|---------|--------|------|------|------|------|------|------|------|------|------|------|
| PISA-15 | Age 15  | ■      |      |      |      |      |      |      |      |      |      |      |
|         | Age 16  |        |      |      |      |      |      |      |      |      |      |      |
|         | Age 17  |        |      | ■    |      |      |      |      |      |      |      |      |
|         | Age 18  |        |      |      |      |      |      |      |      |      |      |      |
|         | Age 19  |        |      |      |      | ■    |      |      |      |      |      |      |
|         | Age 20  |        |      |      |      |      |      |      |      |      |      |      |
|         | Age 21  |        |      |      |      |      |      | ■    |      |      |      |      |
|         | Age 22  |        |      |      |      |      |      |      |      |      |      |      |
|         | Age 23  |        |      |      |      |      |      |      |      | ■    |      |      |
|         | PISA-24 | Age 24 |      |      |      |      |      |      |      |      |      | ■    |
| Age 25  |         |        |      |      |      |      |      |      |      |      |      | ■    |

## Content in the six cycles

The information gathered in each cycle of YITS varied, depending on policy needs and the age of respondents. The information gathered in 2000 came from four sources:

- data derived from the PISA-15 survey;
- a specially designed student survey that collected information on learning behaviours;
- a questionnaire for parents that collected information on learning environments at home; and
- a specially designed school survey, which was distributed in addition to the PISA school questionnaire, which collected detailed information on the learning environment at the school.



In subsequent cycles, only the student survey was re-administered. Questions were adjusted to account for the youths' current situation and their previous responses. No data were collected from parents or schools. Instead, the survey focused on pathways and contextual information to measure progress and change.

YITS gathered information on four main areas: demographic and family characteristics; high school experience; post-secondary education and labour-market activities; and financial factors related to post-secondary education (Motte, et al., 2008; Statistics Canada, 2007). In some cases, the information was used to check data from previous cycles; in others, it provided an update on the respondent's situation and related decisions. The information collected over the six cycles tracked the students' transition to adult roles in higher education, work and society. Though data was collected only every two years, detailed questions were asked to cover the intervening two years.

## THE PISA RE-ASSESSMENT (PISA-24)

The PISA re-assessment (PISA-24) involved a subsample of the PISA-15 cohort that was subsequently re-interviewed through the Youth in Transition Survey (YITS) every two years. The sample was representative of the population of 15-year-old Canadian students in 2000. These respondents were 24 years old in 2009.

Among the respondents who participated in the fifth cycle of data collection for YITS, a subsample of approximately 2 000 were selected to participate in PISA-24. These students were grouped into 12 categories (sample strata) according to gender, PISA reading level and education status. A random sample within each category took the re-assessment. Some 1 297 respondents agreed to take the assessment, which was conducted during May-June 2009 and consisted of a follow-up assessment of readings skills and a background questionnaire.

The PISA-24 survey was scored in conjunction with the PISA assessment in 2009. Since the PISA-24 items were also included in the PISA 2009 assessment, qualified coders who scored the PISA 2009 test booklets also scored the PISA-24 test items. Adjusted weights are included in the final data, ensuring that the sample remains representative. Annex A provides details on weighting adjustments and other issues.

## Test design

PISA-24 used a selection of assessment questions known as the PISA link items. This selection of test items was also used for testing reading as a minor domain in PISA 2003 and PISA 2006 and allowed for trend analyses. As Figure 2.3 shows, the PISA-24 survey consisted of 28 questions covering the spectrum of reading competencies, contexts, formats and text types assessed in PISA. For example, 18 out of the 28 questions included continuous texts, typically composed of sentences in paragraphs, and non-continuous texts (Table 2.1). The other 10 questions involved information that was not conveyed in prose, such as figures, maps or forms. PISA questions were set in four different contexts: educational (eight questions), occupational (seven questions), personal (six questions) and public (seven questions).

■ Figure 2.3 ■

**PISA-24 questions in the PISA reading framework**

| Reading process (Aspect)         | Item format (Question format)   |  |  |   |   |
|----------------------------------|---|--|--|---|---|
|                                  | Multiple choice   | Complex multiple choice                                    | Short response   | Closed constructed response   | Open constructed response   |
| <b>Interpreting</b>              | <b>8 Questions</b><br>(3Qs Level 1,<br>3 Qs Level 2 and<br>2Qs Level 3) |  | <b>1 Question</b><br>(Level 2)   | <b>1 Question</b><br>(Level 4)                                      | <b>3 Questions</b><br>(1Q Level 2,<br>1Q Level 3 and<br>1Q Level 4)   |
| <b>Reflecting and evaluating</b> |   |  | <b>1 Question</b><br>(Level 4)   |   | <b>7 Questions</b><br>(1Q Level 1,<br>2Qs Level 3,<br>1Q Level 3 [Level 2 if partial credit],<br>1Q Level 4 [Level 2 if partial credit],<br>1Q Level 4 [Level 3 if partial credit] and<br>1Q Level 5 [Level 3 if partial credit]) |
| <b>Retrieving information</b>    | <b>1 Question</b><br>(Level 3)  | <b>1 Question</b><br>(Level 4 [Level 2 if partial credit]) | <b>2 Questions</b><br>(1Q Level 2 and<br>1Q Level 6 [Level 4 if partial credit]) | <b>3 Questions</b><br>(1Q Level 1,<br>1Q Level 3<br>and 1Q Level 4) |   |

Note: Figure 2.1 provides all the details on the PISA reading framework.  
Source: Cartwright (2012).

## Data quality and analytical power

A repeat assessment presents several challenges. Many of these are discussed in a technical paper (Cartwright, 2012), but this section offers a brief overview of the main challenges. One of these is the suitability of using the assessment tool, which was designed for 15-year-olds, to assess the reading proficiency of 24-year-olds. Does the test suffer from a ceiling effect: that is, do those students who performed well in PISA-15 have any room to improve in PISA-24? Another concerns measurement error in the context of a repeat assessment and the related problem of regression to the mean: those who did relatively well by chance in PISA-15 are likely to do relatively less well in PISA-24.

### *Is the PISA reading instrument suitable for 24-year-olds and is there a ceiling effect?*

The years spanning adolescence to age 24 are a dynamic period in the lives of young adults, when they are choosing career paths and making important decisions about place of dwelling, life partnerships and parenthood. During this period, young Canadians, who largely followed similar curricula in reading skills during primary and secondary education, begin to use language differently, based on the specific contexts, jargon, and formats found in their educational and labour-market experiences. A study linking PISA-15 questions to assessments of adult literacy showed that the PISA questions were relevant for a population older than 15 years of age (Yamamoto, 2002). In particular, the study showed that while overall performance had improved, the PISA questions retain their relative difficulty.


The International Adult Literacy and Lifeskills survey (ALL) and the Programme for the International Assessment of Adult Competencies (PIAAC) use the same items to test cohorts of respondents ranging in age from 16 to 65 (OECD, 2009). The results of ALL and the evidence emerging from PIAAC suggest that relatively generic reading tasks remain strong predictors of the performance of individuals in their educational and professional careers as well as in their personal lives.

■ Figure 2.4 ■

**Statistical properties of PISA-24 test questions**

| Item name       | Question number | Unit item code | Percent correct in PISA-15 among PISA-24 participants | Estimated question difficulty in PISA-15 | Percent correct in PISA-24 |
|-----------------|-----------------|----------------|---|--|----------------------------|
| Drugged Spiders | Question 1      | R055Q01        | 84  | -1.38                                    | 93                         |
|                 | Question 2      | R055Q02        | 53  | 0.50                                     | 73                         |
|                 | Question 3      | R055Q03        | 61  | 0.07                                     | 84                         |
|                 | Question 4      | R055Q05        | 77  | -0.88                                    | 91                         |
| Aesop           | Question 1      | R067Q01        | 88  | -1.73                                    | 97                         |
|                 | Question 2      | R067Q04        | 54  | 0.52                                     | 76                         |
|                 | Question 3      | R067Q05        | 62  | 0.18                                     | 85                         |
| Shirts          | Question 1      | R102Q04A       | 36  | 1.21                                     | 58                         |
|                 | Question 2      | R102Q05        | 42  | 0.91                                     | 66                         |
|                 | Question 3      | R102Q07        | 85  | -1.57                                    | 98                         |
| Telephone       | Question 1      | R104Q01        | 83  | -1.24                                    | 94                         |
|                 | Question 2      | R104Q02        | 41  | 1.11                                     | 54                         |
|                 | Question 3      | R104Q05        | 29  | 1.88                                     | 45                         |
| Exchange        | Question 1      | R111Q01        | 64  | -0.05                                    | 87                         |
|                 | Question 2      | R111Q02B       | 34  | 1.37                                     | 60                         |
|                 | Question 3      | R111Q06B       | 44  | 0.81                                     | 72                         |
| Employment      | Question 1      | R219Q01E       | 70  | -0.55                                    | 90                         |
|                 | Question 2      | R219Q01T       | 57  | 0.28                                     | 87                         |
|                 | Question 3      | R219Q02        | 76  | -0.92                                    | 95                         |
| South Pole      | Question 1      | R220Q01        | 46  | 0.79                                     | 66                         |
|                 | Question 2      | R220Q02B       | 64  | -0.14                                    | 89                         |
|                 | Question 3      | R220Q04        | 61  | 0.16                                     | 78                         |
|                 | Question 4      | R220Q05        | 85  | -1.60                                    | 92                         |
|                 | Question 5      | R220Q06        | 66  | -0.17                                    | 76                         |
| Optician        | Question 1      | R227Q01        | 58  | 0.20                                     | 68                         |
|                 | Question 2      | R227Q02T       | 60  | 0.05                                     | 73                         |
|                 | Question 3      | R227Q03        | 56  | 0.30                                     | 81                         |
|                 | Question 4      | R227Q06        | 74  | -0.92                                    | 84                         |

Source: Cartwright (2012).

StatLink  <http://dx.doi.org/10.1787/888932577289>



The difference between the two samples, the test at age 15 and the test at age 24, is most evident in the much greater rate of success on all test items in PISA-24. One concern about the validity of the re-assessment results is that the greater success might lead to a “ceiling effect” where the rate of success is so uniformly high on the test items that variation between respondents is more due to statistical error than individual proficiency. However, an analysis of question-level performance conducted on the PISA-24 sample concluded that despite the higher range of performance, there was still sufficient variation in question-level performance, and that there was no artificial restriction in the range of proficiency due to a “ceiling effect”. In other words, the questions used to assess 15-year-olds in PISA remained sufficiently challenging for 24-year-olds that they captured a true range of proficiency, with no indication that the best performers were clustered at the highest proficiency level. Cartwright (2012) provides further details on these analyses.

The nature of PISA-24 is such that the scores produced by the re-assessment are not necessarily the same as those in PISA-15. The re-assessment test is a modification of the PISA-15 assessment test. For example, PISA-24 only focuses in reading, while PISA-15 measured reading, mathematics and science. PISA-24 contains a smaller number of questions than PISA-15. The order of the questions is not necessarily the same in PISA-24 and in PISA-15. Therefore, the scores produced by the PISA-24 re-assessment represent a similar construct of reading performance. The design of PISA-24 is such that it allows for an interpretation of the results in the same numerical scale as PISA-15 reading proficiency. The level of accuracy of PISA-24 results is similar to the level of accuracy of the domains that are not the focus of a particular PISA cycle – the minor domain.

### Regression toward the mean

In practice, any measurement is subject to error, and any repeated measurement is subject to regression toward the mean – the tendency of whatever is being measured to be closer to the average when measured for the second time. In a two-stage assessment, and as long as at least some of the error in measurement is random, any extreme measurement in the first stage is likely to be less extreme in the second stage.

Given that performance in both PISA-15 and PISA-24 is measured with a certain degree of uncertainty, the assessment of skills development based on the difference in performance between the two assessments is naturally associated with a greater degree of measurement uncertainty. The wider measurement uncertainty is a consequence of repeat assessments, since random error enters into the measure of skills at both points in time. In other words, the estimate of skills growth includes measurement error from the initial and the follow-up assessments, compounding any inaccuracies.

It is impossible to avoid measurement error in the estimates of reading proficiency; and as long as the error is random, it is not a serious problem. However, in repeat assessments, the error in the estimate of skills growth is correlated with the initial measure of skills.

To see why this is the case, consider one way that error may enter the estimate of initial proficiency. There are many reasons why a student’s score on the PISA assessment may differ from that student’s true level of ability. For instance, 15-year-old students have good days and bad days, and this will affect their score on the assessment. A student who had a particularly good day when he or she completed the PISA-15 assessment might achieve a higher score than if the same student took the test the day after.

When improvement in reading scores is calculated, students who scored lower than their true level of ability on their first assessment will likely show above-average gains in proficiency. Conversely, a student who performed better than expected on the first assessment will likely show below-average proficiency gains. Thus, when skills growth is examined over the distribution of initial proficiency, one would expect to see larger proficiency gains among students who originally had low scores, and smaller gains, or even a decline in skills, among students who originally had high scores. This would be true whether the tests were completed nine hours or nine years apart.

Regression towards the mean is particularly important in PISA-24 since, as discussed in subsequent chapters, initial proficiency is one of the most significant determinants of skills growth. Because the observed pattern of growth is identical to what one would expect from regression towards the mean, it is important to test if this pattern is a statistical artefact of measurement error or not by cross-validating and contrasting analyses across distinct subpopulations. Moreover, it is often important to try to control for the initial scores of the 15-year-olds when examining the relationship of other variables to skills growth.



To account for regression towards the mean, this analysis has used young people's grades in high school language classes, as reported in PISA-15, as a measure of initial proficiency level. Even if school marks are self-reported measures of proficiency, they are based on a large number of assessments and therefore they are less prone to measurement error, which reduces the risk of regression towards the mean. However, any relationship between skills growth and initial PISA score should be treated with caution. A more detailed discussion of the measurement error in the estimates of skills growth can be found in the Annex A.

## Overview of Canada and its education systems

Canada is a federation composed of ten provinces and three territories.<sup>3</sup> The provinces are autonomous in the administration of social programmes, such as health care and education. Indeed, to fund these two public services, provinces collect more revenue combined than the federal government does, which is unusual for a federated structure. While the federal government may initiate national policies, provinces can opt in or out of these, though they rarely opt out.

Canada spends approximately 6.0% of its GDP on all levels of education. This is higher than the OECD average of 5.9% and is the eleventh highest among all OECD countries. Of this, 3.6% is spent on primary, secondary and post-secondary (non-university) education (compared with the OECD average of 3.8%), and 2.5% is spent on tertiary education (compared with the OECD average of 1.5%). Canada ranks 21<sup>st</sup> of 32 OECD countries in its spending as a percentage of GDP at primary level, and is fourth only after Luxembourg, the United States and Korea in its spending on tertiary education (2008 figures; OECD, 2011a).

Since each province has its own education system, curricula, assessments, accountability practices and teachers' salaries, among many other things, vary from province to province. The age until which schooling is compulsory also differs: schooling is compulsory to the age of 16 in every province except Ontario and New Brunswick, where compulsory education ends at age 18. Public education is free to all Canadians at primary and secondary levels, provided they meet various age and residence requirements. Private schools exist, but are rare and their prevalence varies by province. About 93% of Canadian students attend publicly-funded institutions at primary and secondary levels (OECD, 2011a).

Figure 2.5 provides a schematic overview, by province, of the structure of Canada's education systems. The system of Québec is distinct from that of other provinces, particularly with respect to pathways to post-secondary education.

All provinces, with the exception of Nova Scotia, provide pre-school education (i.e. ages 5 to 6). Ontario is the only province that offers junior kindergarten (i.e., for children aged 4 to 5). New Brunswick, Prince Edward Island and Saskatchewan offer schooling that is intermediate between elementary and secondary, while the other seven provinces do not. In most provinces, primary and secondary school combined encompass 12 years.

The primary school curriculum focuses on language, mathematics, social studies, science, health and physical education and arts; some provinces also offer courses in second languages. In lower secondary school, students take mostly compulsory courses. The proportion of course options increases in upper secondary so that students may take specific courses to prepare for the labour market or to meet the entrance requirements of post-secondary programmes.

Secondary school diplomas are awarded to students who complete the requisite number of compulsory and optional courses (in some instances other factors maybe considered). The secondary school diploma or its equivalent is a requirement for entry into post-secondary and tertiary education.

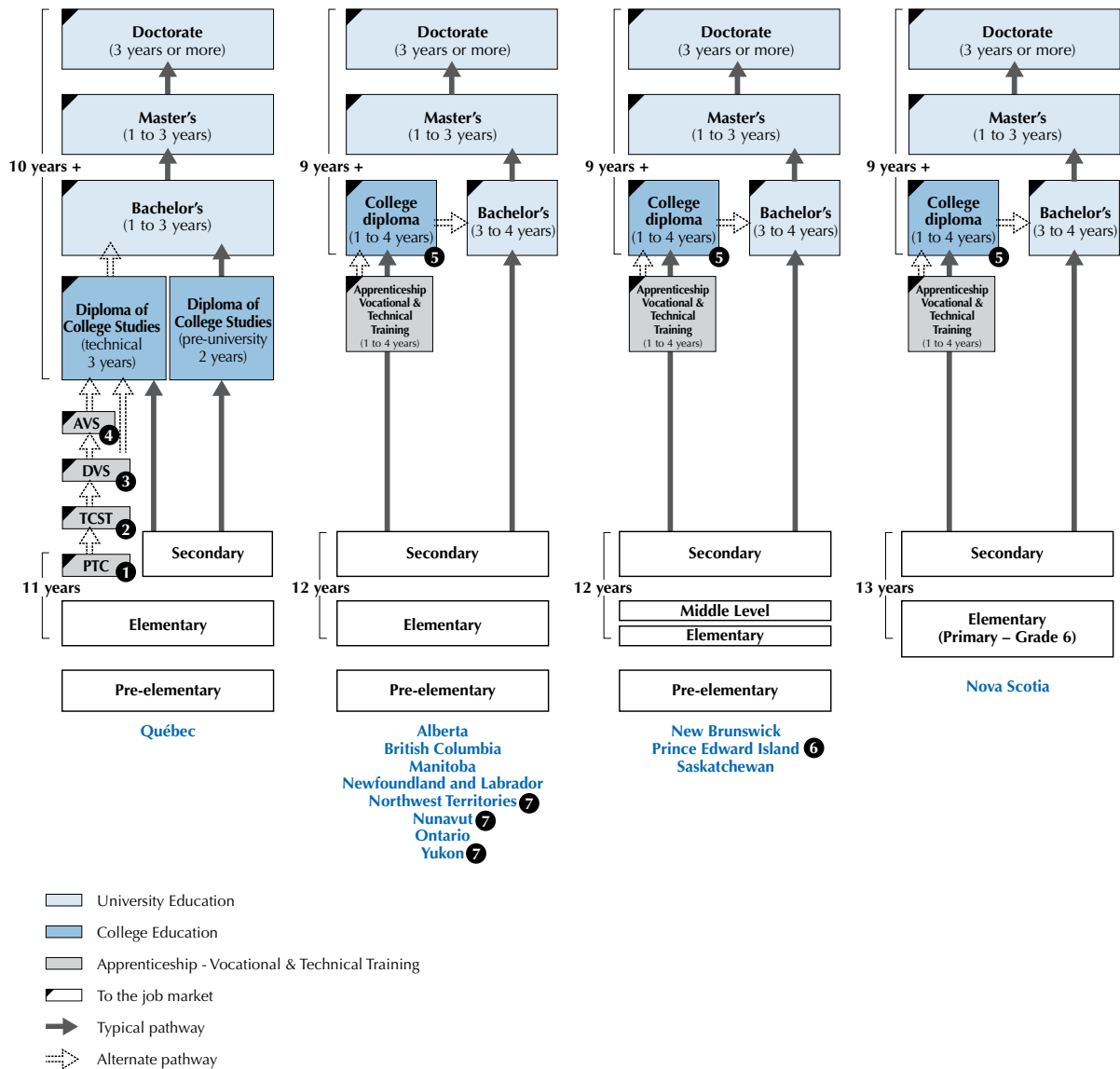
At post-secondary level, a distinction is made between colleges, universities and graduate schools. In colleges, the most common academic qualification granted is a diploma, following two to three years' study. In universities, a bachelor's degree is awarded after three to four years. In graduate schools, students may take a one- to two-year course to be awarded a post-graduate certificate or diploma, such as a master's degree. Doctoral degrees can take three years or more.

Québec is different than the other provinces in the manner in which students proceed from secondary school to colleges/universities. The CÉGEP system (*Collège d'enseignement général et professionnel*) aims to make post-secondary education more accessible. Completion of a CÉGEP programme is compulsory before entering university programmes. To compensate for this, there are 11 rather than 12 years of schooling at the combined primary and secondary levels. Students can choose whether they want to follow a college stream (three years of CÉGEP) or a university stream (where they enter university after two years of CÉGEP).





■ Figure 2.5 ■  
**Overview of Canada's education systems**



- ❶ PTC – Pre-work Training Certificate (3 years after Secondary II)
- ❷ TCST – Training Certificate for a Semi-skilled Trade (1 year after Secondary II)
- ❸ DVS – Diploma of Vocational Studies (600 to 1800 hrs), depending on the programme
- ❹ AVS – Attestation of Vocational Specialization (300 to 1185 hrs), depending on the programme
- ❺ Selected institutions in Alberta, British Columbia, Ontario and Prince Edward Island offer applied degrees.
- ❻ In Prince Edward Island, secondary education is divided into junior high (3 years) and senior high (3 years).
- ❼ The territories have no degree-granting institutions. Some degrees are available through partnerships. Students may also access degrees directly from institutions outside the territories.

Notes: All colleges and universities offer certificate programmes of variable length. Continuing and adult education programmes, while not shown on this chart, may be offered at all levels of instruction.

Source: Canadian Information Centre for International Credentials, Council of Ministers of Education, 2008.



Box 2.2 provides a snapshot of Canada's education systems from an international perspective.

### Box 2.2 **Highlights of Canada's education systems**

Provinces have complete autonomy in determining curricula, assessments, accountability and teachers' salaries.

Québec's education system differs from the other nine provinces in its entry paths to colleges and universities.

There is significant diversity across provinces in terms of languages spoken, percentage of immigrants, graduation rates, GDP per capita and unemployment rates.

In comparison with other OECD member countries, Canada has:

- diverse education systems, due to the federation;
- a multicultural population and education in two official languages;
- medium spending as a percentage of GDP on primary, secondary and non-tertiary education;
- high spending as a percentage of GDP on tertiary education;
- high tertiary tuition fees, offset by well-developed student financial-assistance programmes;
- comparatively high tertiary graduation rates (55% of 25-34 year-olds);
- a moderate 38% earnings premium for a tertiary qualification as compared with an upper secondary qualification;
- a modest 14% earnings premium for an upper secondary qualification as compared with a lower secondary qualification; and
- a high proportion of tertiary-educated individuals in the working-age population.

## CHAPTER SUMMARY AND CONCLUSIONS

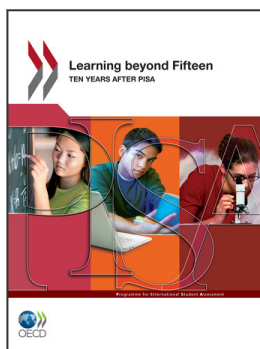
PISA-15, YITS and PISA-24 offer a unique opportunity to measure learning gains between PISA-15 and the re-assessment in 2009 – that is, between the time the participating students were 15 years old and when they were 24. However, several technical issues must be taken into consideration when drawing conclusions from the analysis of these data. The overview of the data sources in this chapter serves as a guide for interpreting the evidence and analysis discussed in the following chapters. The description of Canada's education systems will inform the interpretation of results.

### Notes

1. Marks, G.N. (2007); Bertschy, K., et al. (2009); OECD (2010a).

2. It should be noted that YITS also included a survey of older Canadian youth who were between 18 and 20 years of age in 2000. These individuals were also surveyed every two years, up to 2008, in order to have earlier information on post-secondary education participation and to compare the younger and older cohorts. However, the lack of a measure of competencies was a shortcoming in potential analyses.

3. Due to its federated structure, some statistical indicators for education published in the OECD's annual *Education at a Glance: OECD Indicators* (e.g. OECD, 2011a) are not available for Canada. Therefore, this section is unable to draw extensively on that data source.



**From:**  
**Learning beyond Fifteen**  
Ten Years after PISA

**Access the complete publication at:**  
<https://doi.org/10.1787/9789264172104-en>

**Please cite this chapter as:**

OECD (2012), "PISA-15, YITS, PISA-24, and the Canadian Context", in *Learning beyond Fifteen: Ten Years after PISA*, OECD Publishing, Paris.

DOI: <https://doi.org/10.1787/9789264172104-4-en>

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