

Programme for International Student Assessment - (PISA) 2006

The Performance of Canadian Youth in Sciences, Reading and Mathematics

Results
for Québec Students
Aged 15

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Science, reading and mathematics results of Québec students aged 15

Program for International Student Assessment (PISA) 2006

Overview of the assessment

The member countries of the Organisation for Economic Co-operation and Development (OECD) launched the *Programme for International Student Assessment* (PISA) to provide policy-oriented international indicators on the knowledge and skills of 15-year-old students.¹ PISA is based on a dynamic model of lifelong learning in which new knowledge and skills necessary for successful adaptation to a changing world are continuously acquired throughout life.² PISA assesses what 15-year-olds are capable of accomplishing with what they have learned at school, at home or in their communities. As such, PISA examines young people's ability to think and to apply their knowledge and skills.

PISA was first conducted in 2000, and follows a three-year cycle. It assesses the reading literacy, mathematical literacy and scientific literacy of 15-year-old students. Every three years, PISA reports on the results achieved in these three domains, and presents more detailed results for the major domain assessed in each particular round. Science was the major domain of PISA 2006, so the primary focus was on overall scientific literacy, covering the specific subdomains "Identifying scientific issues," "Explaining phenomena scientifically" and "Using scientific evidence." Although the 2006 cycle contained only basic measures for reading literacy and mathematical literacy, more detailed results were made available in 2000 for reading and in 2003 for mathematics. In 2009, reading literacy will once again be the main focus, and more detailed comparisons will be undertaken.

A total of 57 countries took part in PISA 2006. Statistics Canada put together a national sample representative of schools and classes from the ten Canadian provinces. Québec provided a sample that was large enough for its results to appear separately from those for Canada as a whole.

The 2006 PISA test was administered in the schools during regular class time in April and May 2006. The assessment was a two-hour paper-and-pencil test. Students also completed a 35-minute background questionnaire designed to collect data on themselves and their home lives, along with information on their academic experience, employment and relationships, while school principals filled out a 20-minute questionnaire about their schools.

In Québec, 159 schools and 3 695 students aged 15 took part in the assessment.

1. OECD, *Measuring Student Knowledge and Skills: A New Framework for Assessment*, Paris, 1999.

2. OECD, *The PISA 2003 Assessment Framework: Mathematics, Reading, Science and Problem Solving Knowledge and Skills*, Paris, 2003.

Since science was the major focus of PISA 2006, the results of this cycle bear chiefly on overall scientific literacy and on three scientific subdomains: “Identifying scientific issues,” “Explaining phenomena scientifically” and “Using scientific evidence.” Basic measures of proficiency in reading and mathematics are also included.

This publication presents the results obtained by Québec’s 15-year-olds and compares their achievements with those of their counterparts from Canada and from around the world. The data are taken from the Canadian report entitled Measuring Up: Canadian results of the OECD PISA Study - The performance of Canada’s youth in science, reading and mathematics – First results for Canadians aged 15, which can be downloaded free of charge from any of the following Web sites:

<www.pisa.gc.ca>

<www.statcan.ca>

<www.cmec.ca>

<www.hrhc-drhc.gc.ca/arb>

Part 1: Student performance in science at age 15

1.1 Assessment context

Proficiency in science, as measured by the PISA assessment, is more than just a measurement of the scientific knowledge acquired by students. Measuring proficiency helps clarify what 15-year-old students know, value and are able to do within a personal, social and global contexts.

PISA 2006 assessed three competencies that underpin the PISA 2006 definition of scientific literacy. The features of each competency are shown in Figure 1.1.³

Figure 1.1 PISA 2006 scientific literacy framework

Identifying scientific issues <ul style="list-style-type: none">* Recognizing questions that are possible to investigate scientifically* Identifying keywords to search for scientific information* Recognizing the key features of a scientific investigation
Explaining phenomena scientifically <ul style="list-style-type: none">* Applying knowledge of science in a given situation* Describing or interpreting phenomena scientifically and predicting changes* Identifying appropriate descriptions, explanations and predictions
Using scientific evidence <ul style="list-style-type: none">* Interpreting scientific data and making and communicating conclusions* Identifying the assumptions, evidence and reasoning behind conclusions* Reflecting on the societal implications of science and technological developments

1.2 Québec student performance in science

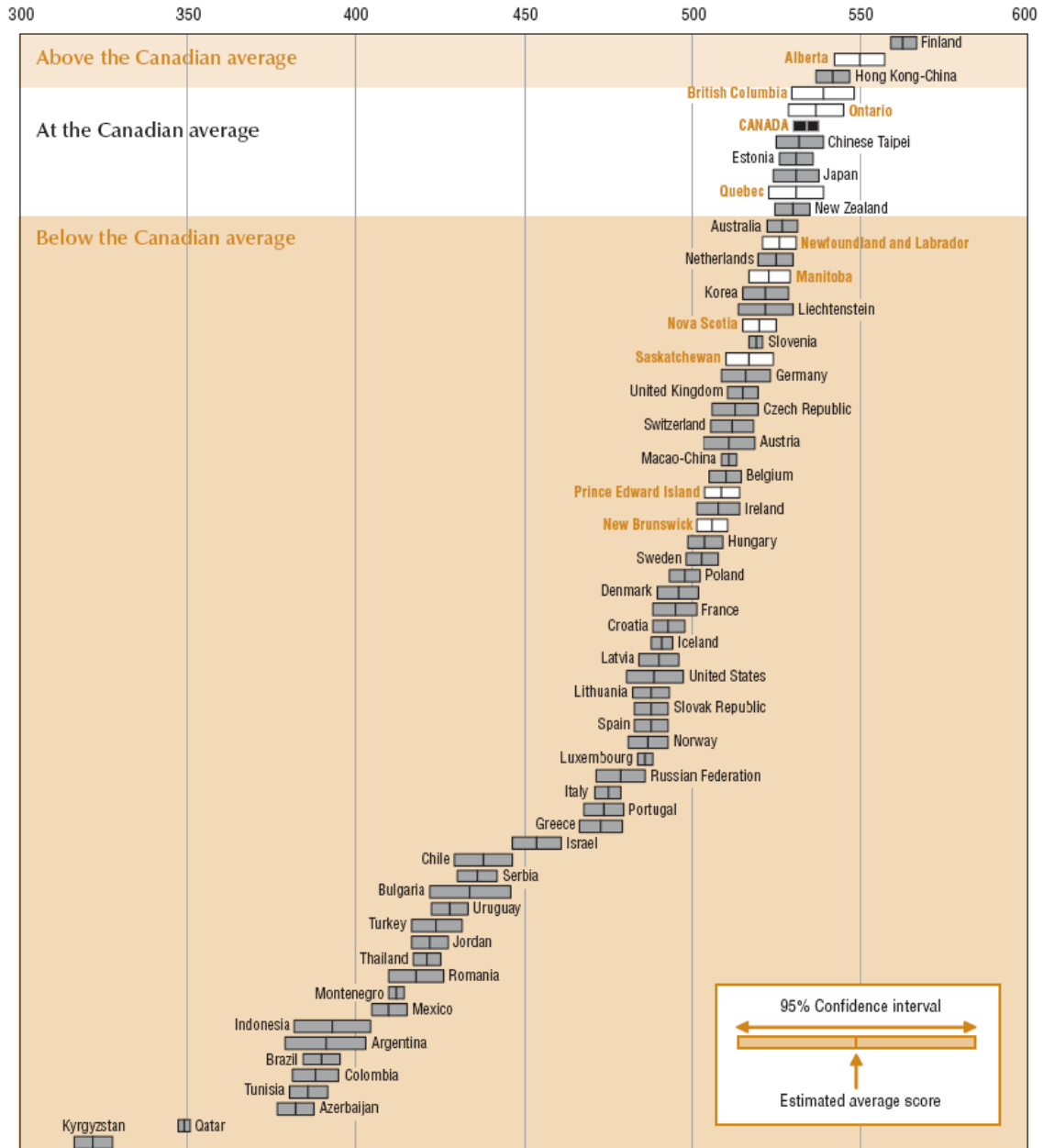
Québec's 15-year-olds ranked fourth among the 57 participating countries and fourth among the ten Canadian provinces, behind Alberta, British Columbia and Ontario. Only Finland, as a country, and Alberta, as a province, performed significantly better than Québec. In addition, a comparison of the 2006 results with the results from 2003 shows that Québec advanced one rank among countries, and 12 nonsignificant points in the cumulative table. Forty-seven countries or provinces obtained results significantly below those of Québec. The OECD average was 500, with a standard error of 0.5.

3. Further details on scientific literacy and the scientific competencies are available in the PISA 2006 framework, *Assessing Scientific, Reading and Mathematical Literacy, A Framework for PISA 2006*, OECD, 2007.

The average scores and confidence intervals by country and by province for overall results in science are shown in Graph 1 below, and presented in Table 1 in the Appendix.

Graph 1

**Average scores and confidence intervals by province and country:
Overall science score (estimated average score)**



Note: The OECD average is 500 with a standard error of 0.5.

1.3 Results for each component of the science test

1.3.1 Science – “Identifying scientific issues”

This subdomain has three focuses:

- * Recognizing questions that are possible to investigate scientifically
- * Identifying keywords to search for scientific information
- * Recognizing the key features of a scientific investigation

For this test component, Québec students ranked fifth out of 57 countries and fourth out of 10 Canadian provinces. Only students from Finland scored significantly higher than Québec students.

Table 2

Average scores and confidence intervals for selected provinces and countries				
“Identifying scientific issues”				
Country and province	Average	Standard error	Confidence interval	
			95% lower limit	95% upper limit
Finland	555	2.3	550	559
Alberta	546	3.9	538	553
British Columbia	536	5.1	526	546
New Zealand	536	2.8	531	542
Australia	535	2.9	531	540
Netherlands	533	3.3	526	539
Ontario	533	4.9	523	543
Canada	532	2.3	527	536
Québec	531	4.6	521	540
China–Hong Kong	528	3.2	522	534
Newfoundland and Labrador	525	3.2	519	530
Japan	522	4.0	514	530
Liechtenstein	522	3.7	515	530
....
OECD	500	0.5		

Source: OECD. *Program for International Student Assessment, 2006*

1.3.2 Science – “Explaining phenomena scientifically”

This subdomain has three focuses:

- * Applying knowledge of science in a given situation
- * Describing or interpreting phenomena scientifically and predicting changes
- * Identifying appropriate descriptions, explanations and predictions

For this test component, Québec students ranked seventh out of 57 countries and fourth out of 10 Canadian provinces. Students from Finland, China–Hong Kong, China–Taipei, Estonia and Alberta scored significantly higher than the Québec students.

Table 3

Average scores and confidence intervals for selected provinces and countries				
“Explaining phenomena scientifically”				
			Confidence interval	
Country and province	Average	Standard error	95% lower limit	95% upper limit
Finland	566	2	562	570
Alberta	553	4.1	545	561
China–Hong Kong	549	2.5	544	554
China–Taipei	545	3.7	538	552
Estonia	541	2.6	535	546
British Columbia	538	4.9	528	547
Ontario	533	4.4	524	542
Canada	531	2.1	527	535
Czech Republic	527	3.5	521	534
Japan	527	3.1	521	533
Québec	523	4	515	531
Slovenia	523	1.5	520	526
Manitoba	522	3.5	515	529
....
OECD	500	0.5		

Source: OECD. *Program for International Student Assessment, 2006*

1.3.3 Science – “Using scientific evidence”

This subdomain has three focuses:

- * Interpreting scientific data and making and communicating conclusions
- * Identifying the assumptions, evidence and reasoning behind conclusions
- * Reflecting on the societal implications of science and technological developments

For this test component, Québec students ranked third out of 57 countries and third out of 10 Canadian provinces. Only students from Finland scored significantly higher than Québec students.

Table 4

Average scores and confidence intervals for selected provinces and countries				
“Using scientific evidence”				
			Confidence interval	
Country and province	Average	Standard error	95% lower limit	95% upper limit
Finland	567	2.3	563	572
Alberta	552	4.1	544	560
Ontario	546	4.4	537	554
Japan	544	4.2	536	552
Québec	542	4.7	532	551
China–Hong Kong	542	2.7	537	548
Canada	542	2.2	537	546
British Columbia	541	5.1	531	551
Republic of Korea	538	3.7	531	546
New Zealand	537	3.3	530	543
Liechtenstein	535	4.3	526	543
Newfoundland and Labrador	533	2.9	527	538
China–Taipei	532	3.7	525	539
....
OECD	492	0.6		

Source: OECD. *Program for International Student Assessment, 2006*

1.4 Competency levels in science

Scientific proficiency is divided into six levels. To reach a given level, students must be able to correctly answer most of the questions corresponding to that level. Consequently, students at a given level are assumed to be capable of providing correct answers to the questions corresponding to all the lower levels. For ease of interpretation, these levels are related to specific score ranges on the overall scale.

Table 5 shows the percentage of students who performed at each level. The countries and provinces listed in the table scored better than Québec for levels 5 and 6; the table also gives the ranking of the country or province on the overall scale.

Table 5

Countries and provinces with a higher percentage of students at level 5 or 6 than Québec									
Percentage of students at each competency level by country and province: overall science scale									
Country or province	Below Level 1 [0 - 334.48]	Level 1 [334.48 - 409.14]	Level 2 [409.14 - 483.81]	Level 3 [483.81 - 558.48]	Level 4 [558.48 - 633.14]	Level 5 [633.14 - 707.81]	Level 6 Over 707.81	Total percentage at levels 5 and 6	Ranking of countries
Finland	0.5	3.5	13.5	29.1	32.4	17	4	21	1st/57
Alberta	0.8	5.3	17.2	29.2	29.1	14.8	3.6	18.4	2nd/57
New Zealand	4.0	9.6	19.7	25.1	24.0	13.7	4.0	17.1	6th/57
China–Hong Kong	1.7	7	16.9	28.6	29.8	13.9	2.1	16	2nd/57
British Columbia	1.9	7.1	18.5	28.1	28.3	13.7	2.3	16	3rd/57
Japan	3.1	8.8	18.4	27.4	27.1	12.5	2.7	15.2	7th/57
China–Taipei	1.9	9.6	18.5	27.3	28	13	1.7	14.7	4th/57
Australia	3.0	9.8	20.2	27.7	24.7	11.8	2.9	14.7	8e/57
Québec	3.1	8	19.2	28.8	26.4	11.9	2.5	14.4	4th/57
Canada	2.2	7.8	19	28.8	27.8	12.1	2.4	14.5	3rd/57

1.5 Comparison of the science results of boys and girls

In PISA 2006, boys achieved significantly better results than girls on the overall science scale in 10 participating countries. In Canada, boys outperformed girls by four points, which is not significant. In Québec, boys outperformed girls by seven points, which is also not significant. However, in 13 countries girls significantly outperformed boys, while the differences observed for the overall science scale in other countries were not significant.

In Québec, in the subdomains “Identifying scientific issues” and “Explaining phenomena scientifically,” girls and boys each took the lead in one area. Girls had a significant lead of 12 points over boys in the subdomain “Identifying scientific issues,” compared to 14 points in Canada and 17 in all OECD countries. In return, boys outperformed girls in the subdomain “Explaining phenomena scientifically” with a significant difference of 21 points in Québec, compared to 17 points in Canada and 15 points in all OECD countries. In the third subdomain, in Québec, a single point separated girls from boys.

The average science scores by gender, scale and province are shown in Table 6 in the Appendix.

1.6 Comparison of the science results obtained by anglophone and francophone students

In Québec, francophone students obtained better results than anglophone students in all science domains. However, the difference is only significant in the overall scale, at 13 points, and in the subdomain “Explaining phenomena scientifically,” at 16 points. Francophone students also perform better in the two other subdomains, but the difference is not significant. In the other provinces where the two language groups were sampled separately, the majority-language group outperformed the minority-language group with differences of between 29 and 46 points in the main domain. Québec is the province with the smallest difference between the two language groups and the most evenly matched performance of the two systems.

Average science scores by school system language, scale and province are presented in Table 7 in the Appendix.

1.7 Comparison of PISA 2006, PISA 2000 and PISA 2003 science results

Because there are differences between the assessment of science proficiency in the PISA 2000, 2003 and 2006 cycles, it is not appropriate here to compare the subdomains in depth. However, the overall results from the three assessments can be compared.

In Québec, there is no statistically significant difference between the results from PISA 2000, PISA 2003 and PISA 2006.

Table 8

Comparison of average science scores: PISA 2006, PISA 2003 and PISA 2000									
Country and province	PISA 2000			PISA 2003			PISA 2006		
	Average	Confidence interval	Rank	Average	Confidence interval	Rank	Average	Confidence interval	Rank
Finland	538	4.9	3rd/32	548	3.8	1st/40	563	4	1st/57
China – Hong Kong				539	8.6	3rd/40	542	5	2nd/57
China–Taipei							532	7.2	4th/57
Québec	541	6.7	3rd/32	520	10.4	10th/40	531	8.4	4th/57
Canada	529	3.1	5th/32	519	4	11th/40	534	4	3rd/57
OECD	500	1		500	1.2		500	1	

Source: OECD. *Program for International Student Assessment, 2000-2003-2006*

Part 2: Student performance in reading

2.1 Assessment context

This section presents the PISA 2006 overall reading scores. This assessment is less comprehensive than the science assessment, given that science was the major domain in PISA 2006. As a result, this report provides only an overview of students' overall reading achievements. Reading was the major domain assessed in PISA 2000, and will be the major domain for PISA 2009.

International experts acknowledge that emphasis should be placed on the acquisition of functional knowledge and skills enabling people to be actively involved in society, and therefore define **reading literacy** (subsequently referred to as **reading**) as:

An individual's capacity to understand, use and reflect on written texts, in order to achieve one's goals, to develop one's knowledge and potential and to participate in society.

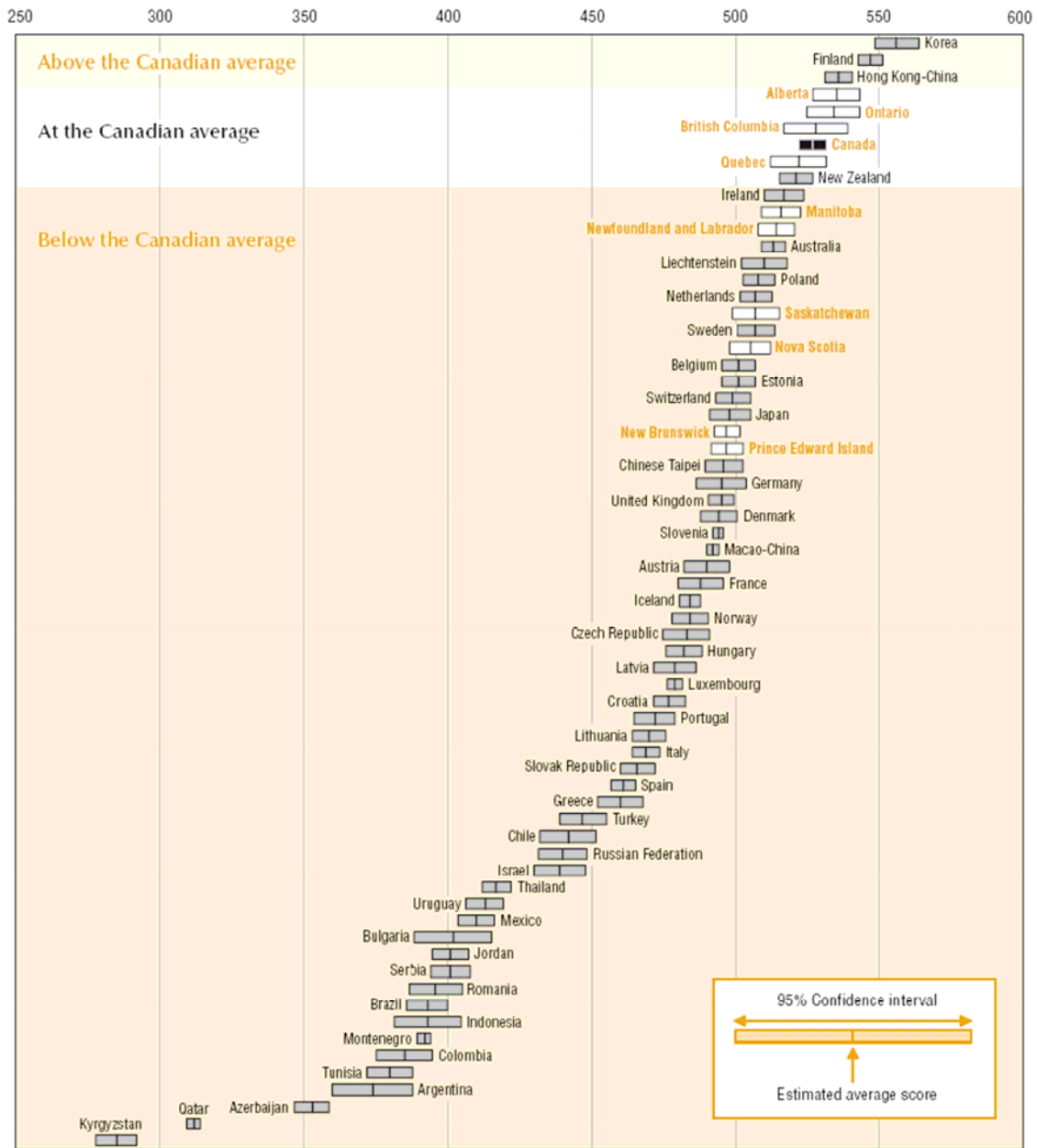
2.2 Québec student performance in reading

Québec students ranked fourth out of 57 participating countries and also fourth out of 10 participating provinces. Only the Republic of Korea and Finland performed significantly better than Québec, while 49 countries or provinces scored significantly lower than Québec. The PISA 2006 reading scores confirm those observed in 2000, when reading was the major assessment domain, and those from 2003, when reading was a minor domain.

The average scores and confidence intervals by province and country for the overall reading scores are shown in Figure 2 below and in Table 9 in the Appendix.

Graph 2

Average scores and confidence intervals for selected provinces and countries:
READING (estimated average score)



Note: The OECD average in 2006 is 492 with a standard error of 0.6.

2.3 Comparison of the reading performance of boys and girls

In Québec, girls significantly outperformed boys on the reading test, by 28 points. This trend is clearly apparent in almost all countries. As in PISA 2000 and PISA 2003, girls scored significantly higher than boys on the PISA 2006 reading test in most countries and all the Canadian provinces. Despite being 28 points, the difference between boys and girls is smallest in Québec and in Alberta. In Canada, the difference varies between 28 and 57 points, with an average of 38 points.

Table 10

Average reading scores by gender						
	Girls		Boys		Difference (boys and girls)	
	Average score	Standard error	Average score	Standard error	Average difference	Standard error
Overall (Québec)	536	4.9	508	6.1	28	4.8
Overall (Canada)	543	2.5	511	2.8	32	2.3
Overall (OECD)	511	0.7	473	0.7	38	0.8

Source: OECD, *Program for International Student Assessment, 2006*

2.4 Comparison of the reading performance of anglophone and francophone students

In Québec, francophone students performed slightly better than anglophone students, but the difference was not significant. PISA 2006 reversed the trend of PISA 2000 and PISA 2003, in which students from the anglophone minority obtained the best scores. In the other provinces, students in the majority-language (English) school system outperformed students in the French system.

Table 11

Average reading scores by province and language of instruction						
Province	English-language school system		French-language school system		Difference between the English-language and French-language school system	
	Average	Standard error	Average	Standard error	Difference	Standard error
Nova Scotia	506	3.6	442	5.7	64	6.5
New Brunswick	510	2.6	465	3.7	45	4.3
Québec	520	3.2	522	5.7	-3	6.8
Ontario	536	4.8	485	3.3	51	5.8
Manitoba	518	3.6	465	5.8	53	6.8

Source: Measuring Up: Canadian results of the OECD PISA Study, 2006

2.5 Comparison of PISA 2006, PISA 2000 and PISA 2003 reading results

For Québec students, the difference between the PISA 2006 results and the results for 2000 and 2003 is not statistically significant. The results for most countries and provinces have declined since 2000, whereas for Québec and Canada they have remained steady, and for the countries at the top of the table (Republic of Korea, Finland and China–Hong Kong), they have tended to improve. As a result, two of these countries have overtaken Québec in the last two PISA surveys, despite the fact that the results of Québec’s students have remained constant.

Table 12

Comparison of average reading scores: PISA 2006, PISA 2003 and PISA 2000									
Country and province	PISA 2000			PISA 2003			PISA 2006		
	Average	Confidence interval	Rank	Average	Confidence interval	Rank	Average	Confidence interval	Rank
Republic of Korea	525	4.8	6th/32	534	6.2	2nd/40	556	7.6	1st/57
Finland	546	5.1	1st/32	543	8.6	1st/40	547	4.2	2nd/57
China–Hong Kong				510	7.4	10th/40	536	4.8	3rd/57
Québec	536	6	2nd/32	525	11.4	3rd/40	522	13.4	4th/57
Canada	534	3.1	2nd/32	528	8.2	3rd/40	527	10.2	4th/57
OECD	500	1		494	1.2		500	1	

Source: OECD, *Program for International Student Assessment, 2000-2003-2006*

Part 3: Student performance in mathematics

3.1 Assessment context

This section presents the PISA 2006 overall mathematics scores. This assessment is less comprehensive than the science assessment, given that science was the major domain in PISA 2006. As a result, this report provides only an overview of students' overall mathematics achievements. Mathematics was the major domain assessed in PISA 2003.

International experts acknowledge that emphasis should be placed on the acquisition of functional knowledge and skills enabling people to be actively involved in society, and therefore define **mathematical literacy** (subsequently referred to as **mathematics**) as:

An individual's capacity to use mathematical knowledge and skills in a functional manner, rather than to simply master them as part of an academic program.

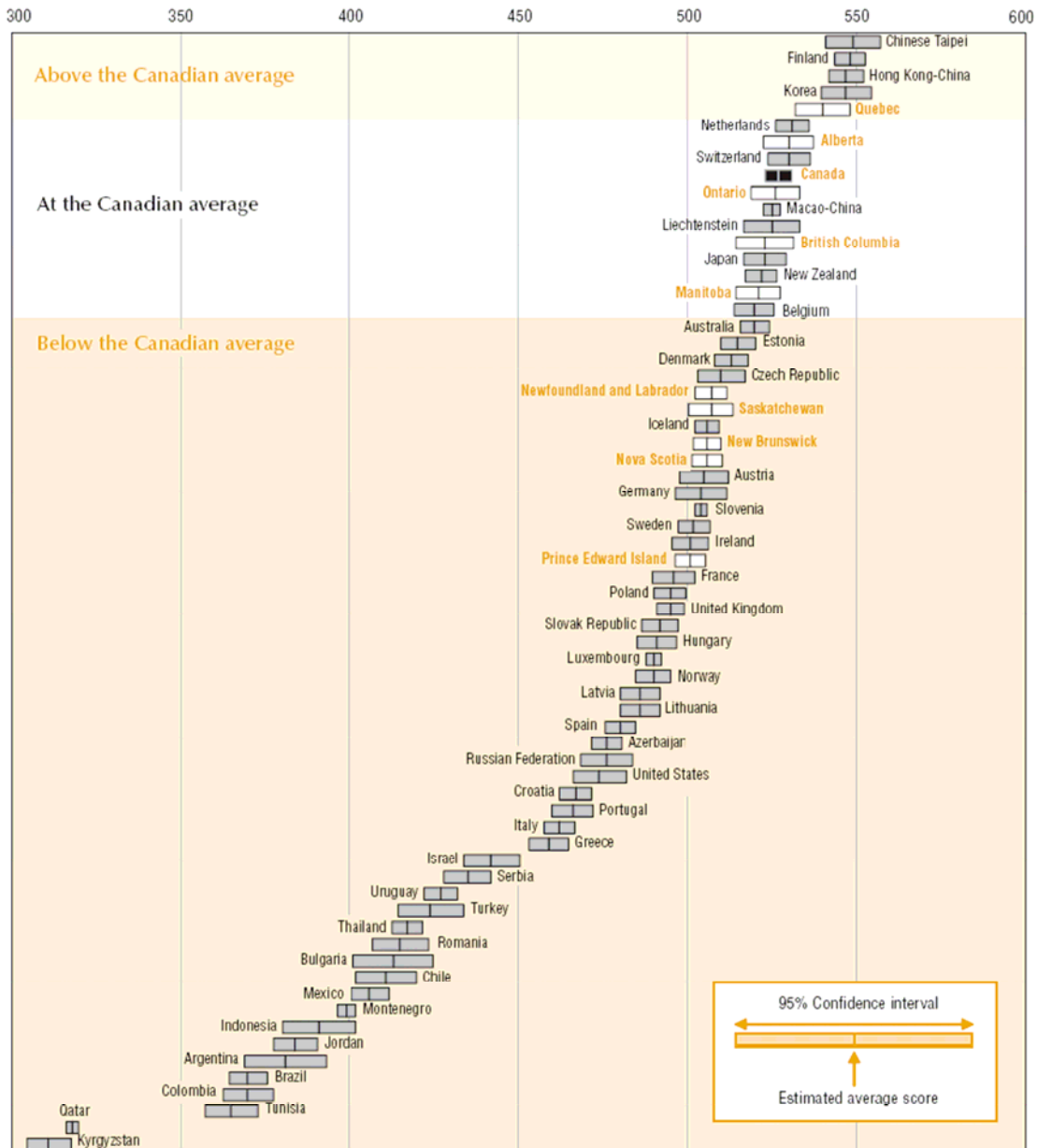
3.2 Québec student performance in mathematics

Québec students ranked fifth out of 57 participating countries and first out of 10 participating Canadian provinces. No country has results that are significantly higher than Québec's. **The difference between Québec and the highest ranking country is only nine points, and Québec is in the same general position, taking the confidence interval into account, as the four countries above it in the table.**

The average scores and confidence intervals for each country and province for the overall mathematics ranking are shown in Graph 3 below, and presented in Table 13 in the Appendix.

Graph 3

**Average scores and confidence intervals for selected provinces and countries:
MATHEMATICS (estimated average score)**



Note: The OECD average in 2006 is 498 with a standard error of 0.5.

3.3 Comparison of the mathematics performance of boys and girls

In Québec, boys outperformed girls by 13 points in the mathematics test, a significant difference. The trend is similar countrywide. In PISA 2006, as in PISA 2000 and PISA 2003, boys scored significantly higher than girls in the mathematics test in most countries, and in all the Canadian provinces in the most recent survey. The average difference between boys and girls is 11 points in OECD countries, with a standard error of 0.7 points.

Table 14

Average mathematics scores by gender						
	Girls		Boys		Difference (boys and girls)	
	Average	Standard error	Average score	Standard error	Average difference	Standard error
Overall (Québec)	533	4.5	547	4.8	13	3.8
Overall (Canada)	520	2	534	2.4	14	1.9
Overall (OECD)	492	0.6	504	0.7	11	0.7

Source: OECD. *Program for International Student Assessment, 2006*

3.4 Comparison of the mathematics performance of anglophone and francophone students

In Québec, francophone students scored slightly better than anglophone students in the mathematics test. The difference is barely significant. In the other provinces, the majority (English-language) school system always scores highest, but the difference is significant only in Ontario and New Brunswick.

Table 15

Average mathematics scores by province and language of the school system						
Province	English-language school system		French-language school system		Difference between the English-language and French-language school system	
	Average	Standard error	Average	Standard error	Difference	Standard error
Nova Scotia	506	2.3	496	5.3	11	5.9
New Brunswick	509	2.8	499	3.2	10	4.2
Québec	530	2.8	541	4.8	-12	5.6
Ontario	527	3.8	507	3	19	4.9
Manitoba	521	3.4	516	5	4	6

Source: Measuring Up: Canadian results of the OECD PISA Study, 2006

3.5 Comparison of PISA 2006, PISA 2000 and PISA 2003 mathematics results

In Québec, the difference between the PISA 2006 results and the results for 2000 and 2003 is not statistically significant. The results for most countries and provinces have declined since 2000, while the results for Québec and Canada have remained steady and the results for the countries at the top of the table, Finland, China–Hong Kong and the Republic of Korea, have tended to improve. In addition, one country, China–Taipei, was added to the list and moved immediately to first place. Although the results of Québec students have remained steady, the results for students from certain other countries have improved, causing Québec to drop down the ranking. However, the difference between Québec and the countries at the top of the table is not significant, since only nine points separate Québec from first place. Paradoxically, while the fifth ranking appears to be the weakest performance in the three domains, in terms of absolute scores it is the strongest; if the confidence interval is taken into account, **Québec shares first place with the four countries with higher scores.**

Table 16

Comparison of average mathematics scores: PISA 2006, PISA 2003 and PISA 2000									
Country and province	PISA 2000			PISA 2003			PISA 2006		
	Average	Confidence interval	Rank	Average	Confidence interval	Rank	Average	Confidence interval	Rank
China–Taipei							549	8.2	1st/57
Finland	536	4.3	4th/32	544	3.8	2nd/40	548	4.6	2nd/57
China–Hong Kong				550	9	1st/40	547	5.4	3rd/57
Republic of Korea	547	5.5	2nd/32	542	7.4	10th/40	547	7.6	4th/57
Québec	550	5.5	2nd/32	537	9.4	6th/40	540	8.8	5th/57
Canada	533	2.8	6th/32	532	3.6	7th/40	527	4.8	7th/57
OECD	500	1		500	1.2		498	1	

Source: OECD. *Program for International Student Assessment, 2000-2003-2006*

Part 4: Presentation of various indices based on the answers given by students, teachers and principals to the questionnaires, by science survey theme

4.1 General science themes

-Students' self-efficacy in science:

Despite the Québec students' low assessment of their own efficacy (students in seven provinces scored higher), they ranked fourth among the provinces even though they had little confidence in their own ability to carry out scientific tasks.

-Students' self-concept in science:

A single province scored higher than Québec, but Québec students obtained better results. This index measures the students' perception of their ability to learn science.

-Index of the general value of science:

Four provinces scored higher than Québec, and three of them ranked higher than Québec on the overall science scale. This index measures the students' assessment of the importance of science within society.

-Index of the personal value of science:

All the provinces scored higher than Québec. This index measures the students' appreciation of science as being relevant and useful for their own purposes.

-Index of interest in science:

Three provinces scored higher than Québec, but only one ranked higher than Québec on the overall science scale. This index measures the students' interest in learning about broad science topics.

-Index of enjoyment of science:

Four provinces scored higher than Québec, with two of them ranking higher and two ranking lower on the overall scale, while remaining above the country average. This index measures enjoyment in learning and reading about science, solving science problems and acquiring new knowledge in science.

-Index of instrumental motivation to learn science:

Québec scored lowest for this index, far behind all the other provinces. The index measures the students' belief that science will be useful for future employment or education. In other words, students in Québec do not see the usefulness of science, even though they perform well.

-Index of future-oriented science motivation:

Québec has a negative score for this theme, and ranks last of all the provinces. The index measures the students' belief that they will study and work in the field of science as an adult.

-Index of science activities outside school:

Québec scores above all the other provinces for this theme, but all the provinces, including Québec, have a negative result. The index measures the extent to which students participate in activities outside school; this means that Québec students, and Canadian students in general, do not participate much in this type of extracurricular activity.

Table 17 in the Appendix shows the index scores of each province for each theme.

4.2 Environmental themes

-Awareness of environmental issues:

Four provinces score higher than Québec, and two of them rank higher than Québec on the overall science scale. This index measures awareness of environmental issues such as acid rain, greenhouse gases, nuclear waste and deforestation.

-Perception of the importance of environmental issues:

Despite a score close to zero, Québec scores highest in Canada for awareness of the importance of environmental issues such as air pollution, energy shortages, deforestation and acid rain.

-Index of optimism regarding environmental issues:

Québec has the lowest score of all the Canadian provinces. This index complements the previous index, since it measures the students' belief that problems associated with environmental issues will improve over the next 20 years.

-Index of sense of responsibility for sustainable development:

Québec is the clear leader for this index, which is also connected to the two previous indices. Young people are aware of the importance of environmental issues and uneasy about the behaviour of previous generations, but are also developing their own sense of responsibility about the planet they inhabit.

Table 18 in the Appendix shows the scores of each province for each theme.

4.3 Teaching themes (student responses)

-Index of teaching practices: interaction:

Québec scores lowest, with a negative result. This index measures interactive teaching practices such as giving students the opportunity to explain their ideas and present their opinions, having class debates or discussion and having student discussions.

-Index of teaching practices: hands-on activities:

Only two provinces scored higher than Québec, and both ranked above Québec on the general scale. This index measures the frequency of hands-on activities in science lessons such as doing practical experiments in the laboratory, drawing conclusions from conducted experiments and observing teacher experiments.

-Index of teaching practices: student investigations:

All the provinces scored higher than Québec for this index, and Québec was the only province with a negative score. This index measures the frequency of student investigations in science lessons such as designing science questions, designing experiments, choosing their own investigation and doing investigations to test out their own ideas.

-Index of teaching practices: focus on models and applications:

Four provinces scored higher than Québec, and three of them ranked higher on the general scale. This index measures students' reports on the frequency of teaching science lessons with a focus on models and applications such as students being asked to apply a science concept to everyday topics, teachers using science to help students understand the world outside school, teachers explaining the relevance of science concepts to one's life and teachers using examples of technology application to show how school science is relevant to society.

Table 18 in the Appendix summarizes the scores of each province for each theme.

4.4 Career planning themes (student responses)

-School preparation index:

Québec scores lowest among all the Canadian provinces, despite a promising positive score. Québec students feel less well prepared than other Canadian students for a scientific career, despite their strong results. This index measures students' perceptions of the usefulness of schooling as preparation for science-related careers.

-Student information index:

Québec scores well below the other provinces, this time close to the OECD average. This index measures students' perceptions of being informed about science-related careers.

Table 18 in the Appendix summarizes the scores of each province for each theme.

Part 5: Performance differences based on certain characteristics

5.1 Performance by level of parental education

Students whose parents had some postsecondary education performed better than students whose parents had a high school education or less. In Québec, this is most clearly demonstrated in the field of science, where a 41-point gap separates the two groups of students.

Table 19 summarizes the difference between students whose parents had some postsecondary education and students whose parents had a high school education or less.

Table 19

Difference in student performance by level of parental education							
Test Country and province	High school or less			Difference	Postsecondary education		
	Percentage of students	Average score	Standard error		Percentage of students	Average score	Standard error
Science							
Québec	36	505	4.9	41	64	547	4.6
Canada	30	514	2.7	32	70	546	2
OECD	52	468	1	53	48	521	1.6
Reading							
Québec	36	500	6.4	36	64	536	5.4
Canada	30	505	3.2	34	70	539	2.4
OECD	52	462	1.1	44	48	507	1.7
Mathematics							
Québec	36	518	5	36	64	554	4.5
Canada	30	511	2.5	25	70	536	2
OECD	52	463	1.1	48	48	511	1.5

5.2 Student performance by immigrant status

In Québec, the performance of students who are first-generation or second-generation immigrants was several points below their non-immigrant peers on the overall science scale. Québec is the province where the difference is greatest, but comparable to the OECD average. However, the difference between the average scores in Québec and the average scores in OECD countries remains constant (at around 30 points).

Table 20 shows the data on student status.

Table 20

Performance differences on the overall science scale by immigrant status						
	Québec		Canada		OECD	
	Score	Standard error	Score	Standard error	Score	Standard error
Percentage of students by immigrant status						
Non-immigrants	87	1.7	78.9	1.2	90.7	0.1
Second-generation immigrants	7.4	1	11.2	0.7	4.6	0.1
First-generation immigrants	5.7	0.9	9.9	0.7	4.8	0.1
Performance on the overall science scale						
Non-immigrants	540	4.1	541	1.8	506	3.4
Second-generation immigrants	501	7.8	528	4.8	469	0.5
First-generation immigrants	483	11.4	519	5.2	451	3.4
Difference between immigrants and non-immigrants						
Second-generation immigrants and non-immigrants	-39	8.4	-12	4.9	-38	3.8
First-generation immigrants and non-immigrants	-57	11.5	-22	5.3	-55	3.4

Conclusion

The first cycle of the Program for International Student Assessment (PISA) of the Organisation for Economic Co-operation and Development (OECD), carried out in 2000, compared the test results of 15-year-old students from Québec, Canada and various countries around the world in three domains: science, reading and mathematics. Each three-yearly PISA assessment looks in more detail at one target domain: reading in 2000, mathematics in 2003 and science in 2006. A new cycle will begin in 2009, with reading once again the main focus. This will allow a more in-depth comparison of reading proficiency, since more information is collected on the target domain. Mathematics and science will, in turn, be the main focus in subsequent assessments.

The publication of the PISA 2000 results contained good news for Canada and especially for Québec, whose students posted a strong performance. The results were confirmed in 2003, and now the PISA 2006 results show that 15-year-old students in Québec and Canada perform well in all three domains. Students from Québec generally obtain results that are comparable to those of the countries that rank highest.

Québec students perform well in science

The science performance of Québec students was significantly bettered only by students from one country (Finland) and one Canadian province (Alberta). Although Québec ranks fourth among countries, two of the countries with a better ranking do not have a score that is significantly better than Québec's.

PISA 2006 was designed to assess three subdomains, "Identifying scientific issues," "Explaining phenomena scientifically" and "Using scientific evidence." Québec students obtained their best score in the subdomain "Using scientific evidence"; **in this subdomain, Québec students ranked third among all countries**, but only Finland had a statistically significant higher score. In the subdomain "Identifying scientific issues," Québec students ranked fifth among all countries, with only Finland, once again, recording a significantly higher score. In the third subdomain, "Explaining phenomena scientifically," Québec students ranked seventh among all countries, behind four countries (Finland, China–Hong Kong, China–Taipei and Estonia) with a significantly higher score.

Students' science skills were also described using six levels of competency. Proportionally more Québec students reached the two top levels (levels 5 and 6) than the OECD average, with 14.4% of 15-year-olds at these two levels. The highest percentage (17.4%) of students at levels 5 and 6 was recorded in the subdomain "Using scientific evidence."

The three PISA assessments in 2000, 2003 and 2006 allow a comparison to be made in terms of overall science proficiency. Québec's results have not changed significantly since the start of the program. After a strong beginning in 2000, the results declined slightly in 2003 and then recovered in 2006, for a stable overall result.

A significant difference is observed in Québec in the results obtained by boys and girls in two out of three subdomains. In the subdomain "Identifying scientific issues," girls outperformed boys by 12 points, while in the subdomain "Using scientific evidence," boys outperformed girls by 21 points. In both subdomains, a similar difference between boys and girls can be observed in all OECD countries.

Québec has the smallest difference between English-language and French-language school systems in Canada. Francophone students obtain significantly better results in the overall scale (13 points) and in the subdomain "Explaining phenomena scientifically" (16 points). In the two other subdomains, francophone students also obtain better results, but not significantly. In the other provinces where the two language systems were sampled separately, the students in the majority language group obtained better results, with differences varying between 29 and 46 on the overall scale.

For the themes examined in PISA 2006, the results are strong despite the low level of interest among Québec students in science subjects. It can only be imagined what the results would be if the general level of student interest in the sciences increased and if scientific careers were regarded as a serious prospect.

In Québec, students who classify as first-generation or second-generation immigrants perform less well than non-immigrants, but the differences observed are, on average, similar to those observed in other participating OECD countries.

Québec students score well in the two minor domains, reading and mathematics

Québec students ranked fourth among all countries in reading, with only two countries having significantly higher scores: the Republic of Korea and Finland. Québec students ranked fifth among all countries in mathematics, but no country scored significantly higher. Only nine points separate Québec from China–Taipei, which ranked first, followed by Finland, China—Hong-Kong and the Republic of Korea.

The Québec students' results in PISA 2006 show no significant differences in reading or in mathematics compared to the PISA 2000 and PISA 2003 results. However, the results continue to show significant differences between boys and girls in reading, where girls outperform boys, and in mathematics, where boys outperform girls.

The PISA 2006 results for the minor domain of reading show no significant difference in Québec between students in the French and English school systems. However, in the minor domain of mathematics, students in the French-language system have a significant, 12-point advantage.

The extremely strong performance of 15-year-old Québec students deserves mention. Overall, compared to students in other participating countries, Québec's young people performed well in the PISA 2006 assessment. The situation in science has improved since 2003, but reading proficiency has declined slightly since PISA 2000 and PISA 2003.

However, the performance of Québec's 15-year-olds in the PISA assessment holds promise not only for their own future, but also for Québec as a whole.

Table 1

Estimated average scores and confidence intervals for provinces and countries: overall science scale				
Country or province	Estimated average	Standard error	Confidence interval 95% lower limit	Confidence interval 95% upper limit
Finland	563	(2.0)	559	567
Alberta	550	(3.8)	543	558
China – Hong Kong	542	(2.5)	537	547
British Columbia	539	(4.7)	529	548
Ontario	537	(4.2)	529	545
Canada	534	(2.0)	530	538
China–Taipei	532	(3.6)	525	539
Estonia	531	(2.5)	526	536
Japan	531	(3.4)	525	538
Québec	531	(4.2)	522	539
New Zealand	530	(2.7)	525	536
Australia	527	(2.3)	522	531
Newfoundland and Labrador	526	(2.5)	521	530
Netherlands	525	(2.7)	519	530
Manitoba	523	(3.2)	517	530
Republic of Korea	522	(3.4)	516	529
Liechtenstein	522	(4.1)	514	530
Nova Scotia	520	(2.5)	515	525
Slovenia	519	(1.1)	517	521
Saskatchewan	517	(3.6)	509	524
Germany	516	(3.8)	508	523
United Kingdom	515	(2.3)	510	519
Czech Republic	513	(3.5)	506	520
Switzerland	512	(3.2)	505	518
Austria	511	(3.9)	503	519
China – Macao	511	(1.1)	509	513
Belgium	510	(2.5)	505	515
Prince Edward Island	509	(2.7)	503	514
Ireland	508	(3.2)	502	515
New Brunswick	506	(2.3)	502	511
Hungary	504	(2.7)	499	509
Sweden	503	(2.4)	499	508

OECD average	500	(0.5)	499	501
Poland	498	(2.3)	493	502
Denmark	496	(3.1)	490	502
France	495	(3.4)	489	502
Croatia	493	(2.4)	488	498
Iceland	491	(1.6)	488	494
Latvia	490	(3.0)	484	495
United States of America	489	(4.2)	481	497
Lithuania	488	(2.8)	483	493
Slovak Republic	488	(2.6)	483	494
Spain	488	(2.6)	483	493
Norway	487	(3.1)	480	493
Luxembourg	486	(1.1)	484	488
Russian Federation	479	(3.7)	472	487
Italy	475	(2.0)	471	479
Portugal	474	(3.0)	468	480
Greece	473	(3.2)	467	480
Israel	454	(3.7)	447	461
Chile	438	(4.3)	430	447
Serbia	436	(3.0)	430	442
Bulgaria	434	(6.1)	422	446
Uruguay	428	(2.7)	423	434
Turkey	424	(3.8)	416	431
Jordan	422	(2.8)	416	428
Thailand	421	(2.1)	417	425
Romania	418	(4.2)	410	427
Montenegro	412	(1.1)	410	414
Mexico	410	(2.7)	404	415
Indonesia	393	(5.7)	382	405
Argentina	391	(6.1)	379	403
Brazil	390	(2.8)	385	396
Colombia	388	(3.4)	381	395
Tunisia	386	(3.0)	380	391
Azerbaijan	382	(2.8)	377	388
Qatar	349	(0.9)	348	351
Kyrgyzstan	322	(2.9)	316	328

Source: OECD. Program for International Student Assessment, 2006

Table 6

Average science scores by scale, province and gender												
Scale and province	Girls		Boys		Gender differences		Girls		Boys		Gender differences	
	Average	Standard error	Average	Standard error	Difference	Standard error	Average	Standard error	Average	Standard error	Difference	Standard error
Science	Average	Standard error	Average	Standard error	Difference	Standard error	Average	Standard error	Average	Standard error	Difference	Standard error
-- Overall scale							-- Explaining phenomena scientifically					
Newfoundland and Labrador	531	3.1	519	3.8	12	4.9	517	3.7	520	4.4	-3	5.5
Prince Edward Island	510	3.4	507	4.0	3	5.0	504	3.7	515	4.2	-11	5.7
Nova Scotia	519	3	521	3.9	-1	4.9	512	3.5	527	4.7	-16	5.1
New Brunswick	505	3.2	507	2.9	-1	4.1	493	3.2	509	3.5	-15	4.4
Québec	527	4.3	534	5.1	-8	4.2	512	4.2	533	5	-21	4.4
Ontario	535	4.6	539	4.8	-4	4.1	525	5.1	541	5	-16	4.7
Manitoba	522	4	525	4.4	-4	5.3	515	4.3	530	4.4	-15	5.3
Saskatchewan	519	4.4	514	4.8	5	5.7	511	5.2	521	5.4	-10	5.9
Alberta	548	3.9	552	4.9	-4	4.7	547	4.4	559	5.2	-13	5
British Columbia	536	4.9	541	5.8	-5	5.4	528	5.3	548	5.9	-21	5.8
Canada	532	2.1	536	2.5	-4	2.2	522	2.3	539	2.6	-17	2.5
OECD average	499	0.6	501	0.7	-2	0.7	492	0.6	507	0.7	-15	0.7
-- Identifying scientific issues							-- Using scientific evidence					
Newfoundland and Labrador	541	3.8	508	4	33	4.8	540	3.5	524	4.4	16	5.4
Prince Edward Island	516	3.3	494	3.6	22	4.9	514	3.5	504	4.1	10	5.5
Nova Scotia	523	3.5	509	4.8	15	4.9	524	3	524	3.7	0	4.8
New Brunswick	519	3.1	505	3	14	4	513	3.5	509	3.3	4	4.9
Québec	537	4.7	524	5.5	12	4.4	541	4.8	542	5.6	-2	4.6
Ontario	540	5.8	527	5	13	4.7	546	4.9	545	4.8	0	4.2
Manitoba	526	4.3	511	4	15	5.1	531	4	528	4.6	3	5.3
Saskatchewan	528	4.6	503	5	25	5.3	523	4.3	511	4.9	12	5.6
Alberta	552	4.2	539	4.9	13	4.7	553	4.1	551	5.3	2	4.7
British Columbia	543	4.7	529	6.8	15	5.3	542	5.4	540	6.3	2	5.7
Canada	539	2.4	525	2.7	14	2.4	542	2.3	541	2.7	1	2.3
OECD average	508	0.6	491	0.7	17	0.7	500	0.7	498	0.8	3	0.8

Source: OECD. Program for International Student Assessment, 2006

Table 7

Average science scores by scale, province and language of the school system						
Scale and province	English-language school system		French-language school system		Difference between school systems	
	Average	Standard error	Average	Standard error	Difference	Standard error
Science -- overall scale						
Nova Scotia	521	2.5	475	5.6	46	6.1
New Brunswick	516	3	842	3.1	34	4.4
Québec	519	3.2	532	4.7	-13	5.7
Ontario	538	4.3	498	3.5	40	5.4
Manitoba	524	3.3	495	5.7	29	5.7
Science -- Identifying scientific issues						
Nova Scotia	517	3.6	465	6.1	52	7
New Brunswick	524	3	483	3.3	41	4.7
Québec	523	3.7	532	5.3	-9	6.6
Ontario	534	5.1	495	3.8	40	6.3
Manitoba	520	3.4	485	5.7	35	6.7
Science -- Explaining phenomena scientifically						
Nova Scotia	520	3.4	474	6.3	46	7.4
New Brunswick	510	3.4	479	3.3	31	4.8
Québec	509	3.6	524	4.5	-16	6
Ontario	534	4.6	492	3.5	42	5.8
Manitoba	523	3.6	496	5.6	27	6.7
Science -- Using scientific evidence						
Nova Scotia	525	2.5	481	6.1	45	6.8
New Brunswick	521	3	487	3.6	35	4.7
Québec	531	3.4	543	5.3	-12	6.4
Ontario	547	4.5	508	3.9	39	5.8
Manitoba	531	3.5	502	6	29	7.1

Source: OECD. Program for International Student Assessment, 2006

Table 9

Estimated average scores and confidence intervals by province and country: reading				
Country or province	Estimated average	Standard error	Confidence interval 95% lower limit	Confidence interval 95% upper limit
Republic of Korea	556	(3.8)	549	563
Finland	547	(2.1)	543	551
China – Hong Kong	536	(2.4)	531	541
Alberta	535	(4.2)	527	543
Ontario	534	(4.6)	525	543
British Columbia	528	(5.7)	517	539
Canada	527	(2.4)	522	532
Québec	522	(5.0)	512	532
New Zealand	521	(3.0)	515	527
Ireland	517	(3.5)	510	524
Manitoba	516	(3.5)	510	523
Newfoundland and Labrador	514	(3.2)	507	520
Australia	513	(2.8)	509	517
Liechtenstein	510	(3.9)	503	518
Poland	508	(2.8)	502	513
Saskatchewan	507	(4.2)	498	515
Netherlands	507	(2.9)	501	512
Sweden	507	(3.4)	501	514
Nova Scotia	505	(3.5)	498	512
Belgium	501	(3.0)	495	507
Estonia	501	(2.9)	495	506
Switzerland	499	(3.1)	493	505
Japan	498	(3.6)	491	502
New Brunswick	497	(2.3)	493	502
Prince Edward Island	497	(2.8)	492	502
China–Taipei	496	(3.4)	490	503
Germany	495	(4.4)	486	504
United Kingdom	495	(2.3)	491	500
Denmark	494	(3.2)	488	501
Slovenia	494	(1.0)	492	496
China – Macao	492	(1.1)	490	494

OECD average	491	(0.6)	490	492
Austria	490	(4.1)	482	498
France	488	(4.1)	480	496
Iceland	484	(1.9)	481	488
Norway	484	(3.2)	478	491
Czech Republic	483	(4.2)	475	491
Hungary	482	(3.3)	476	489
Latvia	479	(3.7)	472	487
Luxembourg	479	(1.3)	477	482
Croatia	477	(2.8)	472	483
Portugal	472	(3.6)	465	479
Lithuania	470	(3.0)	464	476
Italy	469	(2.4)	464	473
Slovak Republic	466	(3.1)	460	472
Spain	461	(2.2)	456	465
Greece	460	(4.0)	452	468
Turkey	447	(4.2)	439	455
Chile	442	(5.0)	432	452
Russian Federation	440	(4.3)	431	448
Israel	439	(4.6)	430	448
Thailand	417	(2.6)	412	422
Uruguay	413	(3.4)	406	419
Mexico	410	(3.1)	404	416
Bulgaria	402	(6.9)	388	415
Jordan	401	(3.3)	394	407
Serbia	401	(3.5)	394	408
Romania	396	(4.9)	387	405
Brazil	393	(3.7)	386	400
Indonesia	393	(5.9)	381	405
Montenegro	392	(1.2)	390	394
Colombia	385	(5.1)	375	395
Tunisia	380	(4.0)	372	388
Argentina	374	(7.2)	360	388
Azerbaijan	353	(3.1)	347	359
Qatar	312	(1.2)	310	315
Kyrgyzstan	285	(3.5)	278	292

Source: OECD. Program for International Student Assessment, 2006

Table 13

Estimated average scores and confidence intervals by province and country: mathematics				
Country or province	Estimated average	Standard error	Confidence interval 95% lower limit	Confidence interval 95% upper limit
China–Taipei	549	(4.1)	541	557
Finland	548	(2.3)	544	553
China – Hong Kong	547	(2.7)	542	553
Republic of Korea	547	(3.8)	540	555
Québec	540	(4.2)	532	548
Netherlands	531	(2.6)	526	536
Alberta	530	(3.8)	522	537
Switzerland	530	(3.2)	523	536
Canada	527	(2.0)	523	531
Ontario	526	(3.7)	519	533
China – Macao	525	(1.3)	522	528
Liechtenstein	525	(4.2)	517	533
British Columbia	523	(4.4)	514	531
Japan	523	(3.3)	517	530
New Zealand	522	(2.4)	517	527
Manitoba	521	(3.3)	514	527
Belgium	520	(3.0)	515	526
Australia	520	(2.2)	516	524
Estonia	515	(2.7)	509	520
Denmark	513	(2.6)	508	518
Czech Republic	510	(3.6)	503	517
Newfoundland and Labrador	507	(2.5)	502	512
Saskatchewan	507	(3.3)	500	513
Iceland	506	(1.8)	502	509
New Brunswick	506	(2.1)	502	510
Nova Scotia	506	(2.3)	502	511
Austria	505	(3.7)	498	513
Germany	504	(3.9)	496	511
Slovenia	504	(1.0)	502	506
Sweden	502	(2.4)	498	507
Ireland	501	(2.8)	496	507

Prince Edward Island	501	(2.3)	496	505
OECD average	498	(0.5)	497	499
France	496	(3.2)	489	502
Poland	495	(2.4)	491	500
United Kingdom	495	(2.1)	491	500
Slovak Republic	492	(2.8)	487	498
Hungary	491	(2.9)	485	497
Luxembourg	490	(1.1)	488	492
Norway	490	(2.6)	485	495
Latvia	486	(3.0)	480	492
Lithuania	486	(2.9)	481	492
Spain	480	(2.3)	475	485
Azerbaijan	476	(2.3)	472	480
Russian Federation	476	(3.9)	468	483
United States of America	474	(4.0)	466	482
Croatia	467	(2.4)	463	472
Portugal	466	(3.1)	460	472
Italy	462	(2.3)	457	466
Greece	459	(3.0)	453	465
Israel	442	(4.3)	433	450
Serbia	435	(3.5)	428	442
Uruguay	427	(2.6)	422	432
Turkey	424	(4.9)	414	434
Thailand	417	(2.3)	412	422
Romania	415	(4.2)	407	423
Bulgaria	413	(6.1)	401	425
Chile	411	(4.6)	402	420
Mexico	406	(2.9)	400	411
Montenegro	399	(1.4)	397	402
Indonesia	391	(5.6)	380	402
Jordan	384	(3.3)	378	391
Argentina	381	(6.2)	369	393
Brazil	370	(2.9)	364	375
Colombia	370	(3.8)	363	377
Tunisia	365	(4.0)	358	373
Qatar	318	(1.0)	316	320
Kyrgyzstan	311	(3.4)	304	317

Source: OECD. Program for International Student Assessment, 2006

Table 17

Science index	NFLD	PEI	NS	NB	QC	ONT	MAN	SASK	ALB	BC	CAN	OECD
Science self-efficacy	0.3	0.15	0.17	0	0.08	0.26	0.16	0.07	0.39	0.27	0.21	0
Science self-concept	0.27	0.34	0.23	0.28	0.33	0.24	0.17	0.15	0.28	0.28	0.27	0
General value of science	0.18	0.09	0.06	0.07	0.13	0.15	0.1	0.02	0.2	0.18	0.14	0
Personal value of science	0.36	0.33	0.26	0.24	0.03	0.22	0.21	0.2	0.34	0.27	0.2	0
General interest in science	0.17	0.09	0.08	0.18	0.13	0.09	0	0.03	0.14	0.13	0.11	0
Enjoyment of science	0.27	0.1	0.18	0.22	0.19	0.14	0.04	-0.01	0.22	0.25	0.17	0
Instrumental motivation to learn science	0.59	0.57	0.45	0.5	0.11	0.34	0.39	0.38	0.48	0.39	0.32	0
Future-oriented science motivation	0.43	0.45	0.32	0.33	-0.01	0.26	0.22	0.15	0.33	0.24	0.2	0
Science activities outside school	-0.1	-0.24	-0.15	-0.09	-0.09	-0.16	-0.29	-0.29	-0.16	-0.17	-0.15	0

Each index is constructed in such a way that the average for all OECD countries is zero (0) and the two-thirds of students score between -1.0 and 1.0 (i.e. a standard deviation of 1). For each index, a positive score indicates a higher level of the target attribute, and a negative score a lower level.

Source: OECD. *Program for International Student Assessment, 2006*

	Province ranked above Québec on the overall scale
	Province scoring higher on the index than Québec

Table 18

	NFLD	PEI	NS	NB	QC	ONT	MAN	SASK	ALB	BC	CAN	OECD
Environment themes												
Awareness of environmental issues	0.31	0.08	0.13	0	0.19	0.37	0.29	0.07	0.48	0.08	0.27	0
Perception of the importance of environmental issues	-0.28	-0.17	-0.17	-0.07	0.06	-0.08	-0.27	-0.25	-0.21	-0.25	-0.1	0
Optimism regarding environmental issues	-0.03	-0.15	-0.17	-0.17	-0.31	-0.23	-0.11	-0.14	-0.17	-0.15	-0.22	0
Responsibility for sustainable development	-0.22	-0.2	-0.3	-0.13	0.45	-0.05	-0.2	-0.32	-0.16	-0.14	0.02	0
Teaching themes												
Science teaching: interaction	0.37	0.29	0.2	0.23	-0.07	0.26	0.22	0.24	0.35	0.17	0.17	0
Science teaching: hands-on activities	0.14	0.26	0.29	0.29	0.46	0.53	0.36	0.45	0.47	0.44	0.46	0.01
Science teaching: student investigations	0.11	0.25	0.19	0.24	-0.02	0.21	0.17	0.21	0.16	0.06	0.13	0
Science teaching: focus on models or applications	0.35	0.32	0.31	0.37	0.37	0.4	0.4	0.31	0.45	0.39	0.39	0.01
Science career themes												
School preparation	0.4	0.3	0.29	0.34	0.24	0.35	0.39	0.31	0.42	0.31	0.33	0
Student information	0.34	0.42	0.35	0.32	0.07	0.39	0.22	0.14	0.36	0.28	0.28	0
Each index is constructed in such a way that the average for all OECD countries is zero (0) and the two-thirds of students score between -1.0 and 1.0 (i.e. a standard deviation of 1). For each index, a positive score indicates a higher level of the target attribute, and a negative score a lower level.												
Source: OECD. <i>Program for International Student Assessment</i> , 2006							Province ranked above Québec on the overall scale					
							Province scoring higher on the index than Québec					

