

# Trends in International Mathematics and Science Study (TIMSS) 2007

## *British Columbia Grade 4 Results – Highlights*

### What is TIMSS?

- ▶ TIMSS is an international study that assesses the knowledge and skills of Grade 4 and Grade 8 students in mathematics and science.
- ▶ It is organized by the International Association for the Evaluation of Educational Achievement (IEA).
- ▶ TIMSS takes place on a four-year cycle, with the most recent study in 2007.
- ▶ In 2007, 59 countries and 8 benchmarking participants (regional entities such as provinces) took part in the study; 43 jurisdictions participated at the Grade 4 level and 56 participated at the Grade 8 level.
- ▶ TIMSS is done on a sample basis with schools and classes of students randomly selected to participate; in BC, about 4,000 Grade 4 students and 4,000 Grade 8 students participated in TIMSS 2007.
- ▶ Contextual questionnaires are administered alongside TIMSS to students, teachers, and schools.

## Grade 4 Mathematics Results

### Overall Results

- ▶ Grade 4 BC students performed at the TIMSS scale average in mathematics.
- ▶ 17 jurisdictions performed above BC, 10 jurisdictions were in BC's range, and 16 jurisdictions were below BC.
- ▶ In Canada, students from Quebec performed above BC students, while students from Alberta and Ontario performed in the same range as BC students.
- ▶ TIMSS results can also be interpreted based on the percentage of students reaching each international benchmark. Results for BC:
  - Advanced benchmark: 4%
  - High benchmark: 23%
  - Intermediate benchmark: 40%
  - Low benchmark: 26%
  - Not yet reaching low benchmark: 7%
- ▶ The majority of BC students reached at least the intermediate benchmark (67%); this percentage was equal to the international average (67%), but lower than some jurisdictions such as Massachusetts (92%), Minnesota (85%), Quebec (74%), Ontario (71%), and Alberta (69%).
- ▶ In BC, boys performed better than girls in Grade 4 mathematics.

### Results by Domain

- ▶ In Grade 4 mathematics, three content domains were assessed: data display, geometric shapes & measures, and number.
- ▶ BC students performed above the TIMSS scale average in the content domains of data display and geometric shapes & measures, but below the TIMSS scale average in number.

### Questionnaire Results

- ▶ **Student attitudes:**  
64% of BC students had a high level of positive attitude toward mathematics. This was lower than the rate internationally (72%), in Quebec (72%) and in Alberta (66%); it was higher than the rate in Ontario (59%).
- ▶ **Homework habits:**  
64% of BC students reported a medium or high level of time spent doing mathematics homework. This was lower than the rate internationally (79%) and in Ontario (65%); it was higher than the rate in Alberta (56%) and in Quebec (47%).
- ▶ **Hours of instruction:**  
Grade 4 BC teachers reported spending an average of 152 hours per school year on mathematics. This was more than the international average (144 hours), equal to Alberta (152 hours) and fewer than Quebec (198 hours) and Ontario (178 hours).

## Grade 4 Science Results

### Overall Results

- ▶ Grade 4 BC students performed above the TIMSS scale average in science.
- ▶ 6 jurisdictions performed above BC, 10 jurisdictions were in BC's range, and 27 jurisdictions were below BC.
- ▶ In Canada, students from Alberta and Ontario performed in the same range as BC students and students from Quebec performed below BC students.
- ▶ TIMSS results can also be interpreted based on the percentage of students reaching each international benchmark. Results for BC:
  - Advanced benchmark: 11%
  - High benchmark: 33%
  - Intermediate benchmark: 37%
  - Low benchmark: 15%
  - Not yet reaching low benchmark: 4%
- ▶ The majority of BC students reached at least the intermediate benchmark (81%); this percentage was higher than the international average (74%), but lower than some jurisdictions such as Massachusetts (92%), Minnesota (84%), and Alberta (82%).
- ▶ In BC, boys and girls performed similarly in Grade 4 science.

### Results by Domain

- ▶ In Grade 4 science, three content domains were assessed: life science, physical science, and earth science.
- ▶ BC students performed above the TIMSS scale average in all three content domains.

### Questionnaire Results

- ▶ **Student attitudes:**  
72% of BC students had a high level of positive attitude toward science. This was lower than the rate internationally (77%), in Quebec (78%) and in Alberta (75%); it was slightly higher than the rate in Ontario (71%).
- ▶ **Homework habits:**  
27% of BC students reported a medium or high level of time spent doing science homework. This was lower than the rate internationally (44%) and in Ontario (29%); it was higher than the rate in Alberta (25%) and in Quebec (13%).
- ▶ **Hours of instruction:**  
Grade 4 BC teachers reported spending an average of 69 hours per school year on science. This was more than the international average (67 hours) and Quebec (43 hours), but fewer than Alberta (122 hours) and Ontario (86 hours).

## Participating Jurisdictions – Grade 4 Results at a Glance

	Mathematics	Science
<b>Above BC</b>	Australia, Chinese Taipei, Denmark, England, Hong Kong SAR, Germany, Japan, Kazakhstan, Latvia, Lithuania, Massachusetts (US), Minnesota (US), Netherlands, Quebec, Russian Federation, Singapore, United States <b>17 jurisdictions</b>	Chinese Taipei, Hong Kong SAR, Japan, Massachusetts (US), Minnesota (US), Singapore <b>6 jurisdictions</b>
<b>In BC's range</b>	Alberta, Armenia, Austria, <b>British Columbia</b> , Hungary, Italy, Ontario, Slovak Republic, Slovenia, Sweden <b>10 jurisdictions</b>	Alberta, <b>British Columbia</b> , England, Hungary, Italy, Kazakhstan, Latvia, Ontario, Russian Federation, United States <b>10 jurisdictions</b>
<b>Below BC</b>	Algeria, Columbia, Czech Republic, Dubai (UAE), El Salvador, Georgia, Islamic Rep. of Iran, Kuwait, Morocco, New Zealand, Norway, Qatar, Scotland, Tunisia, Ukraine, Yemen <b>16 jurisdictions</b>	Algeria, Armenia, Australia, Austria, Colombia, Czech Republic, Denmark, Dubai (UAE), El Salvador, Georgia, Germany, Islamic Rep. of Iran, Kuwait, Lithuania, Morocco, Netherlands, New Zealand, Norway, Qatar, Quebec, Scotland, Slovak Republic, Slovenia, Sweden, Tunisia, Ukraine, Yemen <b>27 jurisdictions</b>