

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

## *British Columbia Grade 8 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 8 Mathematics Results

### Overall Results

- ▶ Grade 8 BC students performed above the TIMSS scale average in mathematics.
- ▶ 8 jurisdictions performed above BC, 8 jurisdictions were in BC's range, and 40 jurisdictions were below BC.
- ▶ In Canada, students from Quebec performed above BC students, while students from 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: 5%
  - High benchmark: 24%
  - Intermediate benchmark: 40%
  - Low benchmark: 24%
  - Not yet reaching low benchmark: 7%
- ▶ The majority of BC students reached at least the intermediate benchmark (69%); this percentage was higher than the international average (46%), but lower than some jurisdictions such as Massachusetts (82%), Minnesota (81%), Quebec (78%), and Ontario (74%).
- ▶ In BC, boys performed better than girls in Grade 8 mathematics.
- ▶ Grade 8 BC students performed similarly in 1999 and 2007 in mathematics.

### Results by Domain

- ▶ In Grade 8 mathematics, four content domains were assessed: number, algebra, geometry and data & chance.
- ▶ BC students performed above the TIMSS scale average in the content domains of number and data & chance, but below the TIMSS scale average in algebra and geometry.

### Questionnaire Results

- ▶ **Student attitudes:**  
Only 35% of BC students had a high level of positive attitude toward mathematics. This was lower than the rate internationally (54%), in Ontario (48%), and in Quebec (47%).
- ▶ **Homework habits:**  
33% of BC students reported a high level of time spent doing mathematics homework. This was slightly higher than the rate internationally (27%), in Quebec (30%), and in Ontario (29%).
- ▶ **Hours of instruction:**  
Grade 8 BC teachers reported spending an average of 136 hours per school year on mathematics. This was more than the international average (120 hours), but less than that of several jurisdictions, including Ontario (159 hours), Massachusetts (155 hours), and Quebec (148 hours).

## Grade 8 Science Results

### Overall Results

- ▶ Grade 8 BC students performed above the TIMSS scale average in science.
- ▶ 10 jurisdictions performed above BC, 6 jurisdictions were in BC's range, and 40 jurisdictions were below BC.
- ▶ In Canada, students from Ontario performed in the same range as BC students and students from Quebec performed below BC.
- ▶ TIMSS results can also be interpreted based on the percentage of students reaching each international benchmark. Results for BC:
  - Advanced benchmark: 7%
  - High benchmark: 31%
  - Intermediate benchmark: 39%
  - Low benchmark: 18%
  - Not yet reaching low benchmark: 5%
- ▶ The majority of BC students reached at least the intermediate benchmark (77%); this percentage was higher than the international average (49%), higher than that of Quebec (68%), equal to that of Ontario (77%), and lower than that of jurisdictions such as Massachusetts (84%) and Minnesota (82%).
- ▶ In BC, boys performed better than girls in Grade 8 science.
- ▶ BC students' Grade 8 science performance decreased from 1999 to 2007.

### Results by Domain

- ▶ In Grade 8 science, four content domains were assessed: biology, chemistry, physics, and earth science.
- ▶ BC students performed above the TIMSS scale average in biology, physics, and earth science and at the TIMSS scale average in chemistry.

### Questionnaire Results

- ▶ **Student attitudes:**  
55% of BC students had a high level of positive attitude toward science. This was lower than the rate internationally (65%), but similar to the rate in Ontario (56%) and Quebec (53%).
- ▶ **Homework habits:**  
27% of BC students reported a high level of time spent doing science homework. This was higher than the rate internationally (14%), in Ontario (8%), and in Quebec (3%).
- ▶ **Hours of instruction:**  
Grade 8 BC teachers reported spending an average of 131 hours per school year on science. This was more than the international average (110 hours), Ontario (96 hours), and Quebec (104), but fewer than Minnesota (137 hours) and Massachusetts (136 hours).

## Participating Jurisdictions – Grade 8 Results at a Glance

	Mathematics	Science
<b>Above BC</b>	Chinese Taipei, Hong Kong SAR, Japan, Massachusetts (US), Minnesota (US), Quebec, Rep. of Korea, Singapore  <b>8 jurisdictions</b>	Chinese Taipei, Czech Republic, England, Hungary, Japan, Massachusetts (US), Minnesota (US), Rep. of Korea, Singapore, Slovenia  <b>10 jurisdictions</b>
<b>In BC's range</b>	<b>British Columbia</b> , Czech Republic, England, Hungary, Lithuania, Ontario, Russian Federation, United States <b>8 jurisdictions</b>	<b>British Columbia</b> , Hong Kong SAR, Lithuania, Ontario, Russian Federation, United States <b>6 jurisdictions</b>
<b>Below BC</b>	Algeria, Armenia, Australia, Bahrain, Basque Country (Spain), Bosnia and Herzegovina, Botswana, Bulgaria, Columbia, Cyprus, Dubai (UAE), Egypt, El Salvador, Georgia, Ghana, Indonesia, Islamic Rep. of Iran, Israel, Italy, Jordan, Kuwait, Lebanon, Malaysia, Malta, Morocco, Norway, Oman, Palestinian National Authority, Qatar, Romania, Saudi Arabia, Scotland, Serbia, Slovenia, Sweden, Syrian Arab Republic, Thailand, Tunisia, Turkey, Ukraine  <b>40 jurisdictions</b>	Algeria, Armenia, Australia, Bahrain, Basque Country (Spain), Bosnia and Herzegovina, Botswana, Bulgaria, Columbia, Cyprus, Dubai (UAE), Egypt, El Salvador, Georgia, Ghana, Indonesia, Islamic Rep. of Iran, Israel, Italy, Jordan, Kuwait, Lebanon, Malaysia, Malta, Morocco, Norway, Oman, Palestinian National Authority, Qatar, Quebec, Romania, Saudi Arabia, Scotland, Serbia, Sweden, Syrian Arab Republic, Thailand, Tunisia, Turkey, Ukraine  <b>40 jurisdictions</b>