TIMSS Advanced 2008

Michael O. Martin and Ina V.S. Mullis

49th IEA General Assembly

Berlin, 6-9 October, 2008
TIMSS Advanced

- Assesses school-leaving students with special preparation in
  - Advanced mathematics
  - Physics
- First administered in 1995
  - Baseline data for new countries
Countries Participating

- Armenia
- Italy
- Iran
- Lebanon
- Netherlands

- Norway
- Philippines
- Russian Federation
- Slovenia
- Sweden
Major Accomplishment

Since last General Assembly:

Completed Data Collection!
TIMSS Advanced Coordinators - Same as in 1995

• Bob Garden – Coordinator, Advanced Mathematics
• Svein Lie – Coordinator, Physics
• Substantial development support from Norway
TIMSS Advanced Assessment Specialists

- Staff at TIMSS & PIRLS ISC
  - Content/measurement experience
  - Production/graphics experience

- IEA Secretariat and DPC

- Statistics Canada

- NRCs – National Research Coordinators
  - Knowledgeable and experienced
# Advanced Mathematics Domains

<table>
<thead>
<tr>
<th>Content</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algebra</td>
<td>35%</td>
</tr>
<tr>
<td>Calculus</td>
<td>35%</td>
</tr>
<tr>
<td>Geometry</td>
<td>30%</td>
</tr>
<tr>
<td><strong>Cognitive</strong></td>
<td></td>
</tr>
<tr>
<td>Knowing</td>
<td>35%</td>
</tr>
<tr>
<td>Applying</td>
<td>35%</td>
</tr>
<tr>
<td>Reasoning</td>
<td>30%</td>
</tr>
</tbody>
</table>
# Physics Domains

<table>
<thead>
<tr>
<th>Content</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanics</td>
<td>30%</td>
</tr>
<tr>
<td>Electricity and Magnetism</td>
<td>30%</td>
</tr>
<tr>
<td>Heat and Temperature</td>
<td>20%</td>
</tr>
<tr>
<td>Atomic and Nuclear Physics</td>
<td>20%</td>
</tr>
<tr>
<td><strong>Cognitive</strong></td>
<td></td>
</tr>
<tr>
<td>Knowing</td>
<td>30%</td>
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<tr>
<td>Applying</td>
<td>40%</td>
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<tr>
<td>Reasoning</td>
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</table>
Scope of Assessment

- Total assessment time – 7 hours
- Each subject - assessment time
  - 3 hours, 30 minutes
  - 7 30-minute blocks
  - 3 trend blocks, 4 new blocks
- Each student
  - One 90-minute booklet of 3 blocks
- 8 booklets in total – 4 per subject
Questionnaires

• Student Questionnaires
  – Advanced mathematics
  – Physics

• Teacher
  – Advanced mathematics
  – Physics

• School

• Curriculum (adv. math. and physics)
Sampling Designs

• Non-overlapping schools
  – Separate school samples for advanced mathematics and physics
  – Each subject: 120 schools; 2,000 students
  – Total: 240 schools; 4,000 students

• Overlapping schools
  – Essentially same school sample for advanced mathematics and physics
  – Students: half mathematics, half physics
  – 120 schools; 4,000 students
Major Activity – Preparing for Data Collection

• Procedural manuals for instrument preparation and data collection

• Software for within-school sampling (WinW3S) and data entry and validation (WinDEM)

• Training for International Quality Control Monitors
  – IEA Secretariat and TIMSS & PIRLS International Study Center
  – November 2007, Amsterdam
Major Activity – Translation and Layout Verification

• Translation verification
  – Conducted by IEA Secretariat, using professional translation company
  – 13 instruments; 10 countries; 11 languages

• Layout verification
  – Conducted by TIMSS & PIRLS International Study Center
  – Completed March 2008
Major Activity - Scoring Training

- Task force met to revise and finalize scoring guides and training materials
  - Oslo, September 2007
- Scoring guides and training materials posted on website
  - January 2008
- 5th NRC meeting to conduct scoring training
  - Portoroz, Slovenia; January 2008
Major Activity – Data Collection

*** February – May 2008 ***

Major Activity – Data Processing and Checking

- 3 completed, at TIMSS & PIRLS ISC
- 6 in process at the IEA DPC
Major Activity – Preparing for Scaling and Reporting

• Established baseline for 1995
  – Rescaled 1995 data using current TIMSS scaling model

• Programming preparations for 2008 scaling – 15 achievement scales

• Review Report exhibits, with data
  – 6th NRC meeting, January 2009, University of Twente
Major Activity – International Report

- Sampling adjudication – January 2009
- Scaling and scale anchoring – April 2009
- Data exhibits complete – June 2009
- Draft International Report – July 2009
- Review International Report – August 2009
- Print and distribute Report – November 2009
- Release Report – Oslo, December 1, 2009
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