TIMSS Advanced 2008

Michael O. Martin and Ina V.S. Mullis

48th IEA General Assembly
Hong Kong SAR, 8-11 October, 2007
TIMSS Advanced

- Assesses School-Leaving Students with Special Preparation in
  - Advanced Mathematics
  - Physics
- First Administered in 1995
  - Baseline Data for New Countries
Major Accomplishment

Since Last General Assembly:

Conducted Field Test and Completed Instrument Development!
Countries Participating

• Armenia
• Italy
• Iran
• Lebanon
• Netherlands
• Norway
• Russian Federation
• Slovenia
• Sweden
TIMSS Advanced Coordinators  
- Same as in 1995

- Bob Garden – Coordinator, Advanced Mathematics
- Svein Lie – Coordinator, Physics
- Substantial Development Support from Norway
  - Liv Sissel Gronmo, NRC
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
Scope of Assessment

For Each Subject

• Total 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

• Four Booklets in Total
Questionnaires

- Student Questionnaires
  - Advanced Mathematics
  - Physics

- Teacher
  - Advanced Mathematics
  - Physics

- School

- Curriculum
### 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>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cognitive</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowing</td>
<td>30%</td>
</tr>
<tr>
<td>Applying</td>
<td>40%</td>
</tr>
<tr>
<td>Reasoning</td>
<td>30%</td>
</tr>
</tbody>
</table>
Sampling

• Predominant Design
  – Separate School Samples for Advanced Mathematics and Physics
  – Each Subject: 120 Schools; 2,000 Students

• Also Popular
  – Same School Sample for Advanced Mathematics and Physics
  – Assessment Booklets Rotated in Classes
  – 120 Schools; 4,000 Students
Overview of Year’s Activities: Finalized Field-test Instruments

- 2nd NRC Meeting for Final Review of Instruments and Procedures
  - Oslo, Norway, November 2006
  - 260 Mathematics and Physics Items
  - School, Teacher, and Student Questionnaires (5)

- Materials for TIMSS Advanced 2008 Field Test Posted on Web
  - 90 Mathematics Items and 90 Physics Items
  - November 2006
Translation and Verification for the Field Test

• Translation and Verification Began
  – November 2006

• Layout and Verification Began
  – December 2006

• Translation Verification and Layout Verification Completed
  – February 2007
Scoring Training for Field Test

- Pilot Test for Scoring Training Materials
  - October-November 2006
- Task Forces Met to Develop Training Materials
  - November-December 2006
- Training Materials Posted on Website
  - January 2007
- 3rd NRC Meeting to Conduct Scoring Training
  - Rome, Italy, February 2007
Conducted Field Test
February-March 2007

Advanced Mathematics and Physics

- 180 Items/6 Booklets
- Questionnaires
  - 8 Countries
  - 7,000 Students
  - 450 Teachers
  - 300 Schools
Analyzed and Reviewed Field-test Results

- Mathematics and Physics Field-test Data Processed and Analyzed
  - April-May 2007

- School, Teacher, and Student Questionnaire Data Processed and Analyzed
  - April-May 2007
Analyzed and Reviewed Field-test Results (cont.)

- **4th NRC Meeting to Review and Approve Items and Questionnaires for TIMSS Advanced 2008 Data Collection**
  - Lubeck, Germany, June 2007

- **Final Instruments Posted on Website**
  - July, 2007
  - May be inspected by appointment!
Preparation for Data Collection

- 2nd Task Force Meeting to Prepare Materials for Scoring Training
  - Oslo, Norway, September 2007

- Training Seminar for Quality Control Monitors
  - Amsterdam, November 2007

- Translation and Layout Verification
  - January-March 2008
Data Collection

• 5th NRC Meeting for Scoring Training
  – Portoroz, Slovenia, January 2008

Data Collection February – June 2008

• All Data to DPC
  – September 2008
Addressing Curriculum Coverage

• Curriculum Questionnaire For Each Country
  – TIMSS Topics in Country’s Curriculum

• Teacher Questionnaires
  – TIMSS Topics Taught

• Test-Curriculum Matching Analysis
  – Achievement Based on the Items Specially Identified by Each Country as Addressing its Curriculum
TIMSS Advanced

Last Chance to Sign Up!
TIMSS Advanced
2008

Michael O. Martin and Ina V.S. Mullis
48th IEA General Assembly
Hong Kong SAR, 8-11 October, 2007