TIMSS Advanced
2008
Analysis and Reporting

Michael O. Martin, Ina V.S. Mullis, and David F. Robitaille

50th IEA General Assembly
Tallinn, 5-8 October, 2009
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

• Also participated in 1995
Major Accomplishment

Since last General Assembly:

Completed Scaling, Analysis, and Reporting!
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
TIMSS Advanced 2008 Assessment Frameworks

Published September 2006
## 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>
</tbody>
</table>

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

<table>
<thead>
<tr>
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</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>
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</tbody>
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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 Questionnaires
  - Advanced mathematics
  - Physics

- School Questionnaire

- Curriculum Q. (adv. math. and physics)
Major Activity – Prototype Tables for International Report

12 chapters - 6 advanced mathematics, 6 physics

• Curriculum
• Summary of Achievement
• Achievement at International Benchmarks
• Student backgrounds and attitudes
• Teachers and instruction
• School contexts
Major Activity – TIMSS Advanced 2008 International Report

- NRCs submitted data to IEA DPC
  - September 2008

- TIMSS & PIRLS ISC and IEA DPC completed data almanacs and draft exhibits
  - December 2008

- NRCs reviewed report exhibits with background data at 6th NRC meeting
  - January 2009, Hengelo, The Netherlands
Major Activity – Scaling and Analysis for 2008

IRT Scales linking 2008 to 1995
- Advanced mathematics
- Physics

Average percent correct
- Content domains
  - Advanced Mathematics: Algebra, Calculus, Geometry
  - Physics: Mechanics, Electricity and magnetism, Heat and temperature, Atomic and nuclear physics
- Cognitive domains
  - Knowing, applying, reasoning in each subject
Major Activity – TIMSS Advanced 2008 International Report

- Sampling adjudication - TIMSS & PIRLS ISC, Statistics Canada, Sampling Referee
  - January 2009

- TIMSS & PIRLS ISC and ETS completed achievement scaling
  - April 2009

- Task Force conducted scale anchoring
  - April 2009, Boston
Major Activity – TIMSS Advanced 2008 International Report (cont.)

- TIMSS & PIRLS ISC and IEA DPC completed data exhibits – May 2009
- TIMSS & PIRLS ISC drafted International Reports – June, July 2009
- NRCs reviewed draft at 7th NRC meeting – August 2009, Stockholm
- Also IEA Publications Committee review
Major Activity – TIMSS Advanced 2008 International Report (cont.)

• International Report exhibits sent to NRCs
  – September 15, 2009

• Draft International Database sent to NRCs
  – September 17, 2009
• International Report printed and distributed to NRCs
  – November 2009

• International press release
  – December 9, 2009, Oslo
  – 10:00am CET
Major Activity – TIMSS Advanced 2008 International Report (cont.)

• Technical Report posted on web
  – December 9, 2009

• International Database and User Guide distributed to NRCs and posted on web
  – December 15, 2009
TIMSS Advanced 2008
International Report

Confidential
Preview
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