TIMSS 2011
Launched - Assessment Frameworks and Field Test Development

Ina V.S. Mullis and Michael O. Martin
50th IEA General Assembly
Tallinn, 5-8 October, 2009
TIMSS 2011

• Mathematics and Science
• Grades 4 and 8
• Baseline for new countries

More than 60 countries!
Planning to Participate

Armenia  Honduras  Netherlands  Thailand
Australia  Hong Kong SAR  New Zealand  Turkey
Austria  Hungary  Norway  Ukraine
Azerbaijan  Indonesia  Oman  United Arab Emirates
Bahrain  Iran, Islamic Rep. of  Palestinian Nat’l Auth.  United States
Bosnia and Herzegovina  Israel  Poland  Yemen
Botswana  Italy  Qatar  Benchmarking Participants
Bulgaria  Japan  Romania
Chile  Jordan  Russian Federation
Chinese Taipei  Kazakhstan  Saudi Arabia
Czech Republic  Korea, Rep. of  Scotland
Denmark  Kuwait  Serbia
Egypt  Lebanon  Singapore
England  Libya  Slovakia
Finland  Lithuania  Slovenia
Georgia  Malaysia  South Africa
Germany  Malta  Spain
Ghana  Mongolia  Sweden

TIMSS 2011

Benchmarking Participants
Alberta, Canada
Dubai, UAE
Ontario, Canada
Quebec, Canada
TIMSS 2011 SMIRC

Mathematics Experts

Kiril Bankov, Bulgaria
Karen Priscilla Manriquez Riveros, Chile
Christoph Selter, Germany
Khattab Mohammad Ahmad Abu Libdeh, Jordan
Bob Garden, New Zealand
Liv Sissel Gronmo, Norway
Fou-Lai Lin, Taiwan
Mary Lindquist, United States
Hung-Hsi Wu, United States
TIMSS 2011 SMIRC

Science Experts

Martina Kekule, Czech Republic
Jouni Viiri, Finland
Saule Vingeliene, Lithuania
Berenice Michels, Netherlands
Mariam Mohammad Abdallah Ahmad, Qatar
Gabriela Noveanu, Romania
Galina Kovaleva, Russian Federation
Maria Pilar Jimenez-Aleixandre, Spain
Wolfgang Dietrich, Sweden
Gerry Wheeler, United States
TIMSS 2011 QIRC

Sue Thomson, Australia
Josef Basl, Czech Republic
Naima Hassan, Egypt
Linda Sturman, England
Wilfried Bos, Germany
Clara Anumel, Ghana
Frederick Leung, Hong Kong SAR
Martina Meelissen, Netherlands
Barbara Japelj, Slovenia
Patrick Gonzales, United States
TIMSS 2011 Mathematics and Science Coordinators

**Graham Ruddock**, Mathematics Coordinator
- NFER, England

**Christine O’Sullivan**, Science Coordinator
- K-12 Consulting, Inc., United States

**Berinderjeet Kaur**, Mathematics Consultant
- NIE, Singapore

**Helen Lye**, Science Consultant
- ACER, Australia
Overview of TIMSS 2011 Schedule

2009 - Year of Instrument Development

2010 - Year of Field Test and Finalizing Instruments – Southern Hemisphere

2011 - Year of Data Collection and Processing

2012 - Year of Data Analysis and Reporting

2013 - Month of the International Database
• Endorsed *TIMSS Assessment Frameworks* and design for 2011

• Reviewed and updated (as needed) all objectives in each mathematics and science content domain

• Agreed on plan for online survey to review updated mathematics and science frameworks
1st TIMSS 2011 NRC Meeting -cont

• Reviewed proposed outline for updating Contextual Framework (based on PIRLS experience)

• Agreed on plan for online survey of questions in context questionnaires

• Agreed to write chapters for TIMSS 2011 Encyclopedia

• Planned sampling activities
1st TIMSS 2011 SMIRC Meeting
March 2009, London

• Reviewed results of NRC online survey of mathematics and science frameworks

• Finalized TIMSS 2011 Mathematics and Science Frameworks

• Reviewed TIMSS 2011 Item Writing Guidelines

• Developed prototype reasoning items for field test
• Joint meeting with PIRLS 2011 Questionnaire Development Group (QDG)
• Finalized Contextual Framework outline
• Presented draft questionnaires for field test (modular design for 4th grade)
• Renewed focus on policy relevant constructs
• Worked intensively to update the TIMSS questionnaires
• Reviewed background questionnaires

• Conducted item writing workshop for field test
  – Trained participants using *TIMSS 2011 Item Writing Guidelines*
  – Yielded approximately 800 draft items
    • Mathematics: 160 Grade 4, 200 Grade 8
    • Science: 160 Grade 4, 270 Grade 8
June and July - devoted to preparing draft items for review and recommending field test items

- Mathematics: 140 Grade 4, 170 Grade 8
- Science: 140 Grade 4, 170 Grade 8

SMIRC reviewed and revised draft items and scoring guides for field test

SMIRC identified preferred field test items
TIMSS 2011 Assessment Frameworks
Published, August 2009
# Mathematics Content Domains

<table>
<thead>
<tr>
<th>Fourth-Grade</th>
<th>Percentages</th>
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<tbody>
<tr>
<td>Number</td>
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<td>Geometric Shapes and Measures</td>
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<tr>
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<table>
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<th>Eighth-Grade</th>
<th>Percentages</th>
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<tbody>
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<td>Number</td>
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<tr>
<td>Algebra</td>
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<tr>
<td>Geometry</td>
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<td>Data and Chance</td>
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## Science Content Domains

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<tr>
<td>Physical Science</td>
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<thead>
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<tbody>
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<td>Biology</td>
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<tr>
<td>Chemistry</td>
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<tr>
<td>Physics</td>
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<tr>
<td>Earth Science</td>
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## Cognitive Domains

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<th>Mathematics</th>
<th>Percentages</th>
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<td>4th Grade</td>
<td>8th Grade</td>
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<tr>
<td>Knowing</td>
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</tr>
<tr>
<td>Applying</td>
<td>40%</td>
<td>40%</td>
</tr>
<tr>
<td>Reasoning</td>
<td>20%</td>
<td>25%</td>
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<table>
<thead>
<tr>
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</tr>
<tr>
<td>Knowing</td>
<td>40%</td>
<td>35%</td>
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<tr>
<td>Applying</td>
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<tr>
<td>Reasoning</td>
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<td>30%</td>
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Scope of TIMSS 2011 Assessment

- Total Assessment Time
  - Grade 4: 8 hours, 45 minutes
  - Grade 8: 10 hours, 30 minutes

- 28 Mathematics and science item blocks

- 14 student booklets in total, each grade

- Assessment Time per Student
  - Grade 4: 72 Minutes
  - Grade 8: 90 Minutes
Contextual Framework

National and Community Contexts

- Demographics and resources
- Organization and structure of the education system
- The mathematics and science curricula, focusing on primary through junior secondary schooling
School Contexts

- School characteristics
- School organization for instruction
- School climate for learning
- Teaching staff
- School resources
- Parental involvement
Classroom Contexts

- Teacher education and development
- Teacher characteristics
- Classroom characteristics
- Instructional materials and technology
- Curriculum topics taught
- Instructional activities
- Assessment
Student Characteristics and Attitudes

- Student demographics and home background
- Student attitudes toward learning mathematics and science
Final Review of Field Test Questionnaires

- July-August – incorporated suggestions from reviews into questionnaires
- September – posted online for final review by TIMSS 2011 QIRC and NRCs
- October – field test questionnaires finalized and distributed to NRCs
- Same online options as PIRLS
• Review draft items and scoring guides for field test

• Agree on field test item pool

• Review sampling and operations procedures for field test

• December – finalize and distribute field test achievement items and scoring guides to NRCs
Upcoming Schedule Highlights

2010

March 1 - April 15

*** Conduct Field Test ***

May 15 All field test data to IEA DPC
Upcoming Schedule Highlights

2010

March  4th NRC meeting, Melbourne, to conduct constructed-response scoring training for field test

June  3rd SMIRC meeting to review field test results and recommend assessment items

July  2nd QIRC meeting with PIRLS QDG to review field test results and recommend questionnaires
2010

August  5th NRC meeting, Prague, to agree on assessment items and scoring guides

August  Assessment items and scoring guides finalized and distributed to NRCs
Upcoming Schedule Highlights

*** Data Collection ***

October-December 2010
Southern Hemisphere

March-June 2011
Northern Hemisphere

*** Data Collection ***
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