

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



TIMSS & PIRLS
International Study Center
Lynch School of Education, Boston College

TIMSS 2011

- Mathematics and Science
- Grades 4 and 8
- Trends 1995, 1999, 2003, 2007, 2011
- 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	
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	Slovak Republic	
Finland	Lithuania	Slovenia	
Georgia	Malaysia	South Africa	
Germany	Malta	Spain	
Ghana	Mongolia	Sweden	
	Morocco	Syrian Arab Republic	

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

1st TIMSS 2011 NRC Meeting

February 2009, Sharm El Sheikh

- 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

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- 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

1st TIMSS 2011 QIRC Meeting

April 2009, Munich

- 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

2nd TIMSS 2011 NRC Meeting May 2009, Washington DC

- 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

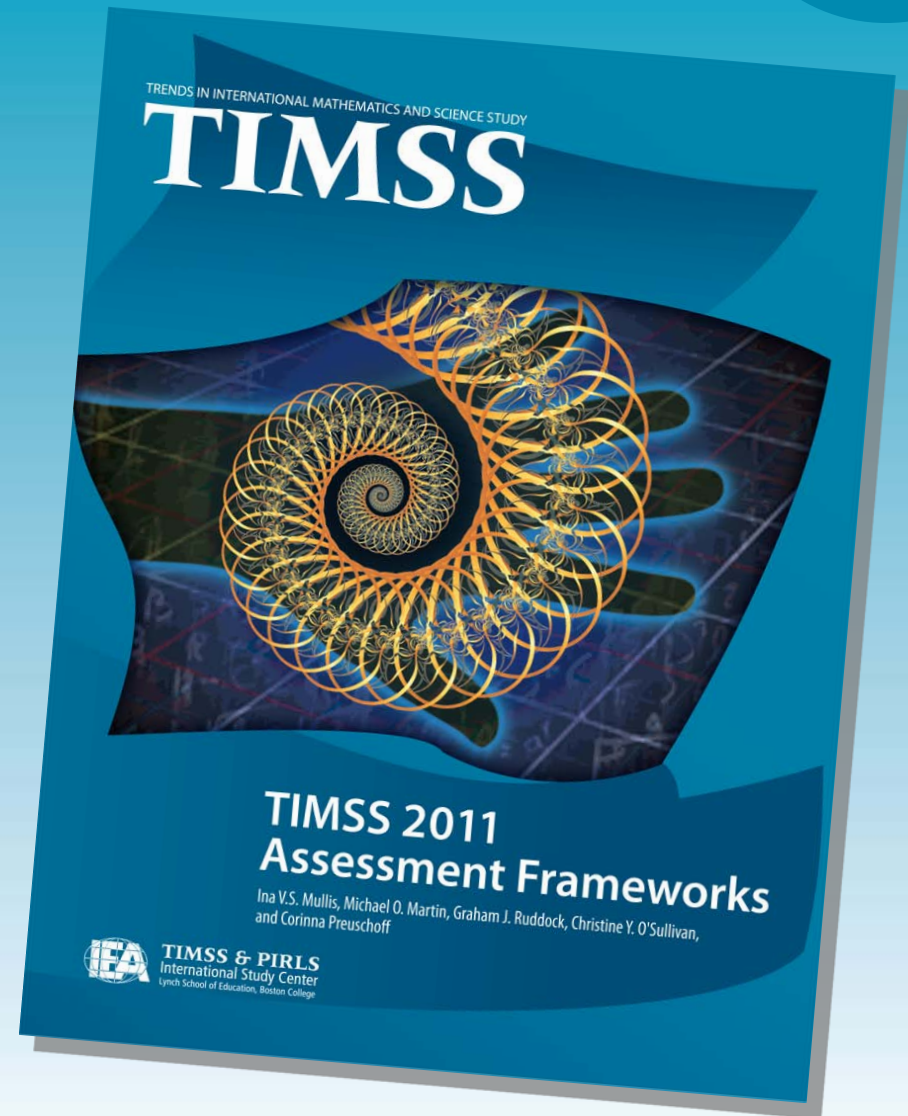
2nd TIMSS 2011 SMIRC Meeting

August 2009, Amsterdam

- 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



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Mathematics Content Domains

Fourth-Grade

Percentages

Number	50%
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Geometric Shapes and Measures	35%
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Data Display	15%
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Eighth-Grade

Number	30%
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Algebra	30%
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Geometry	20%
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Data and Chance	20%
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Science Content Domains

Fourth-Grade	Percentages
Life Science	45%
Physical Science	35%
Earth Science	20%
Eighth-Grade	
Biology	35%
Chemistry	20%
Physics	25%
Earth Science	20%

Cognitive Domains

Mathematics	Percentages 4 th Grade	Percentages 8 th Grade
Knowing	40%	35%
Applying	40%	40%
Reasoning	20%	25%
Science		
Knowing	40%	35%
Applying	40%	35%
Reasoning	20%	30%

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

3rd TIMSS 2011 NRC Meeting

November 2009, Istanbul

- 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

Upcoming Schedule Highlights

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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