



eTIMSS Initiative

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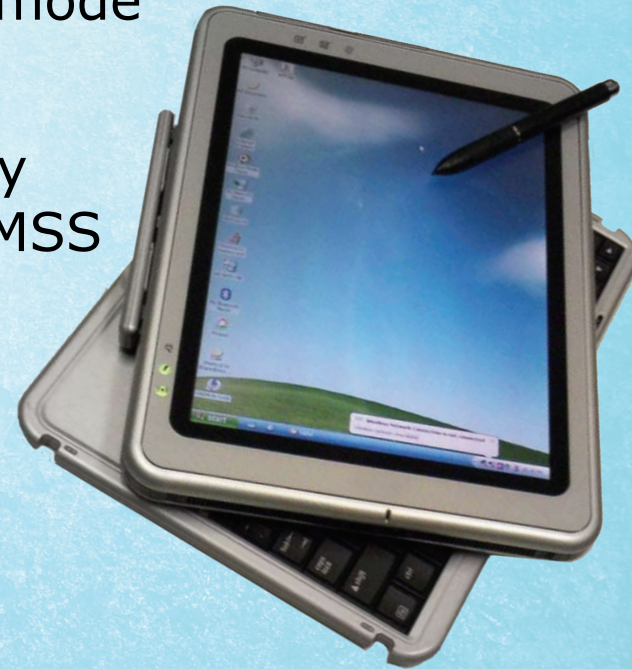
TIMSS
2015



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

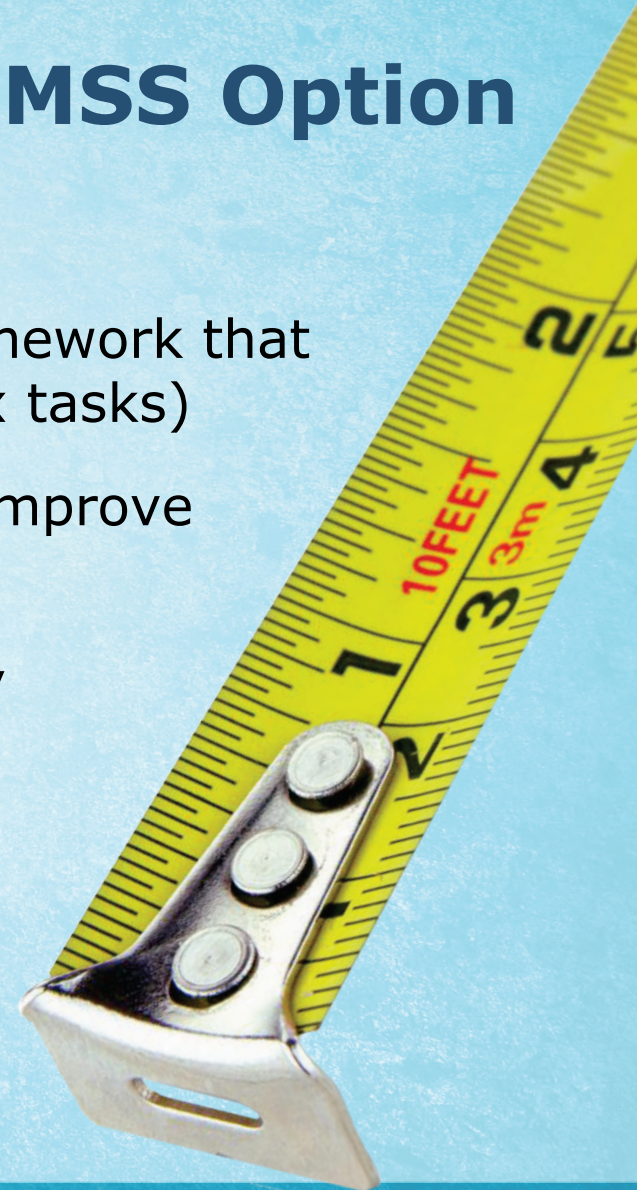
Goal: TIMSS will include a computerized option by the 2019 assessment

- Dual System: Countries can choose eTIMSS or paper-and-pencil TIMSS (paperTIMSS)
 - Countries can change to eTIMSS mode when they are ready
 - IEA does not want to preclude any countries from participating in TIMSS
- eTIMSS Device: Tablet with stylus, optional keyboard for higher grades



Reasons to Provide eTIMSS Option

- Improve measurement
 - Assess complex areas of the framework that are difficult to measure (complex tasks)
 - More engaging assessment can improve motivation
- Increase Operational Efficiency
 - Item development
 - Translation
 - Printing and shipping
 - Receipt control and scoring



Challenges

Maintain Comparability

Ideally, the mode of administration should be irrelevant in reporting TIMSS results

- Maintain trends over time for countries choosing to move to eTIMSS
- Maintain comparability between eTIMSS and paperTIMSS across countries



Step-by-Step Plan to Evolve While Maintaining Trend 2014-15

1. Convert existing trend paper-and-pencil items to computer format
2. Begin work on eTIMSS electronic assessment systems
3. Begin work on complex assessment tasks (PSIs)
 - Separate component of eTIMSS, similar to ePIRLS extension of PIRLS



Step-by-Step Plan to Evolve While Maintaining Trend 2015-16

4. Complete converting existing trend items
5. Complete developing initial PSIs in mathematics and science

Note: number of PSIs dependent on funding

- At least 3 mathematics and 3 science PSIs at fourth grade



Step-by-Step Plan to Evolve While Maintaining Trend 2017

6. Conduct pilot study in 6-10 countries, including trend items and PSIs
7. Develop the eTIMSS and paperTIMSS items in both formats for TIMSS 2019



Step-by-Step Plan to Evolve While Maintaining Trend 2018

8. Field test both eTIMSS and paperTIMSS

2019

9. Conduct TIMSS 2019 assessment with eTIMSS countries bridging from paperTIMSS to eTIMSS



Challenges

Resources

- Very costly for IEA to develop eTIMSS systems
- Countries desiring the eTIMSS Option need to provide funding
- United States launching the initiative with \$500,000-\$1million over next 2-3 years to help fund development of eTIMSS instruments and systems



Challenges

Technical Resources and Capabilities

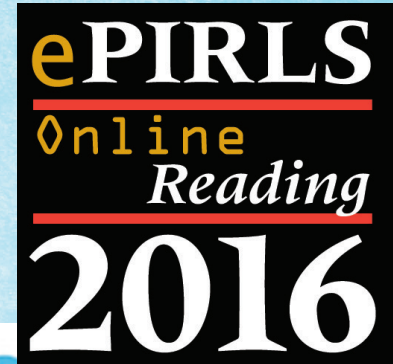
Requires sophisticated software development

- eTIMSS Item Builder – templates to accommodate trend and newly developed items
- eTIMSS Translation and Verification Management System
- eTIMSS Assessment Delivery System
- eTIMSS Data Management and Operations procedures
- eTIMSS Online Scoring System

Challenges

Technical Resources and Capabilities

- Build on IEA's developing expertise in this area
 - ICILS, ePIRLS
- Special advisors from existing large-scale digital assessment initiatives in the participating countries (e.g., NAEP in the United States)



2014-2015

Transfer Trend Mathematics and Science Items into Computer Format

- Fourth grade
 - 8 blocks (189 items)
 - Initial stage
- Numeracy
 - 6 blocks (160 items)
- Eighth grade
 - 8 blocks (238 items)
 - Depends on funding



2014-2015

Develop New Problem-Solving and Inquiry Tasks (PSIs)

- Extended tasks developed for TIMSS 2003 and 2007 (funded by US National Science Foundation)
- ePIRLS paradigm – PSI task window and assessment window to guide the student
- Current work on scenario based tasks (e.g., NSF, NAEP)
 - More promising in science than in mathematics

2015-16

Complete Initial Development of Items, Tasks, and Systems

- Cognitive labs to examine templates for trend item types and ideas for PSIs
- Small scale studies to identify threats to the validity of comparing between eTIMSS and paperTIMSS
 - E.g., computer skills, interaction between item and format
- Complete transfer of trend items and developing PSIs

2017

Pilot Study of eTIMSS with 6 to 10 Countries

- Operational feasibility of approach
 - Test systems for trend and PSI items
- Information to improve PSIs
- 3-6 schools per country
 - Get in on the ground floor!



2017

Develop New Items for TIMSS 2019

- 6 blocks of items needed to replace items released after 2015 (each subject and grade)
- Twice as many developed and field tested as needed (12 blocks)
- Develop eTIMSS and paperTIMSS together to be comparable
- Revise and develop more PSI tasks depending on funding—this only for eTIMSS

2018

Field Test for All TIMSS 2019 Countries of Newly Developed Materials

- paperTIMSS countries field test paperTIMSS
- eTIMSS countries field test eTIMSS, including PSI tasks and paperTIMSS
- Study comparing achievement on eTIMSS and paperTIMSS



2019

Conduct TIMSS 2019

- eTIMSS countries bridge to eTIMSS by assessing in both modes
 - eTIMSS in future
- Similar to bridge study in TIMSS 2007 when we changed design
- paperTIMSS countries continue as in previous TIMSS assessments





eTIMSS Initiative Thank You!

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