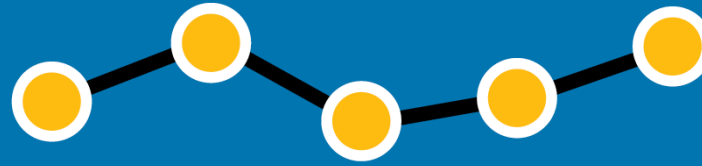


TIMSS 2023



28
*Years of
Trends*



Michael O. Martin, Ina V.S. Mullis, Matthias von Davier

61st IEA General Assembly - Online
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TIMSS 2023



TIMSS & PIRLS
International Study Center
Lynch School of Education
BOSTON COLLEGE

TIMSS 2023 Completes Transition to e-Assessment

- Second stage of two-stage process
 - Half the countries transitioned to eTIMSS in 2019, process completed with TIMSS 2023
 - Paper option available based only on trend items, no new items developed for paper
- Great appreciation due to our eTIMSS 2019 pioneering countries!
 - Instrumental in developing an understanding of how to meet the challenges of moving to e-assessment
 - Important lessons



New TIMSS 2023 Partners

RM Results – assessment software provider

- RM Assessment Master



RTI International – sampling partner

- Successor to Statistics Canada



Support for Item Development

- IPN Kiel – science assessment development
- ACER Australia – mathematics assessment development



New Group Adaptive Design

Adapting the Assessment to Countries' Student Populations

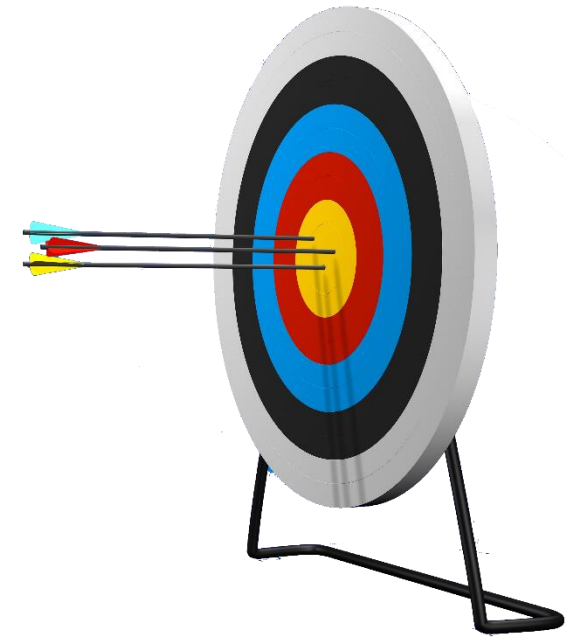
- With each TIMSS and PIRLS assessment cycle, the range in achievement across the participating countries grows wider
- The new group adaptive design will improve measurement effectiveness for a country
 - Better alignment between assessment difficulty and student achievement
- For TIMSS 2023 the TIMSS & PIRLS International Study Center will develop assessment booklets that range from less difficult to more difficult

New Group Adaptive Design

Adapting the Assessment to Countries' Student Populations

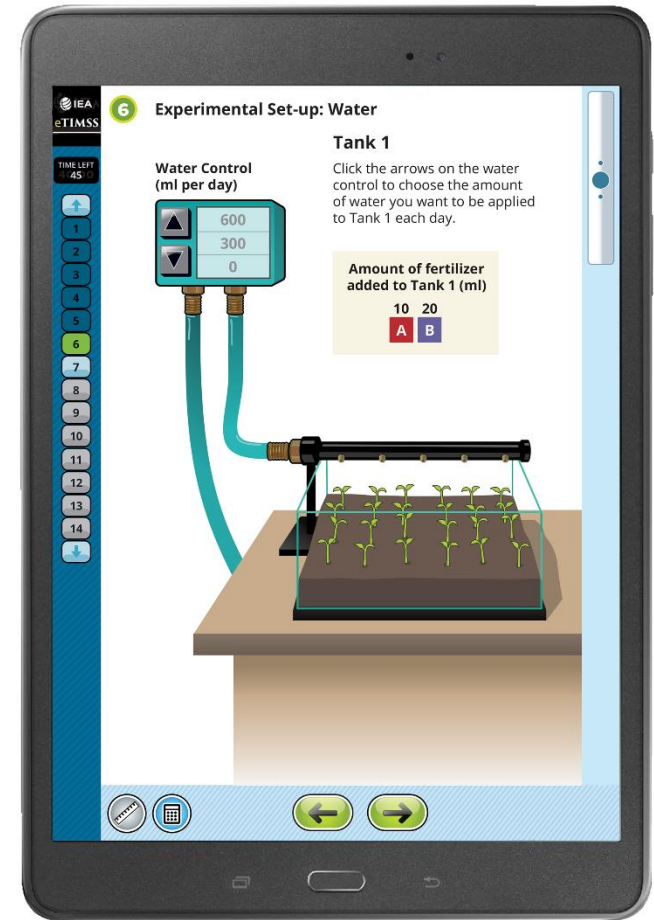
- Higher performing countries
 - Proportionally more of the more difficult booklets
- Lower performing countries
 - Proportionally more of the less difficult booklets

Goal is better match between assessment difficulty and student achievement in each country



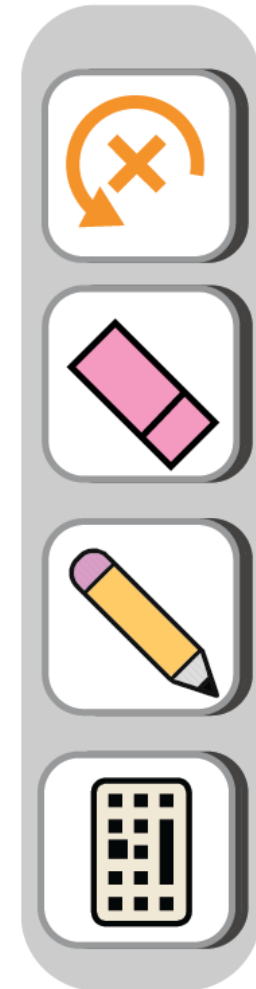
Capitalizing on the Benefits of e-Assessment

- Integrate Problem Solving and Inquiry (PSI) tasks into TIMSS
 - PSIs are extended scenario-based tasks and science investigations
 - Could only be administered with eTIMSS in 2019
- More emphasis on innovative item types
- More attention to process data



Progress on Innovative Item Types

- Working with RM Results on extending their Item Designer to include innovative item types for TIMSS 2023
- Videos and animations
- Creating various types of graphs
- Freehand drawing
- Tools to “show your work”
 - Drawing and text
 - Text and symbols



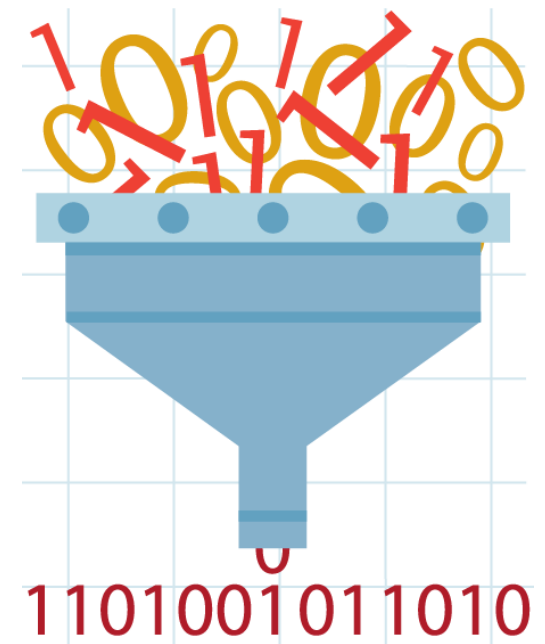
Progress on Updating the Assessment Framework and Item Development

- TIMSS 2023 SMIRC made recommendations for updates to the assessment frameworks
 - NRC review in December
- Item development beginning earlier
 - Computer based item development needs extra time
- TIMSS 2023 item development meeting for NRCs and their item writing teams - scheduled for Hamburg, Feb 2021
- Looking forward to the challenge of developing innovative items!



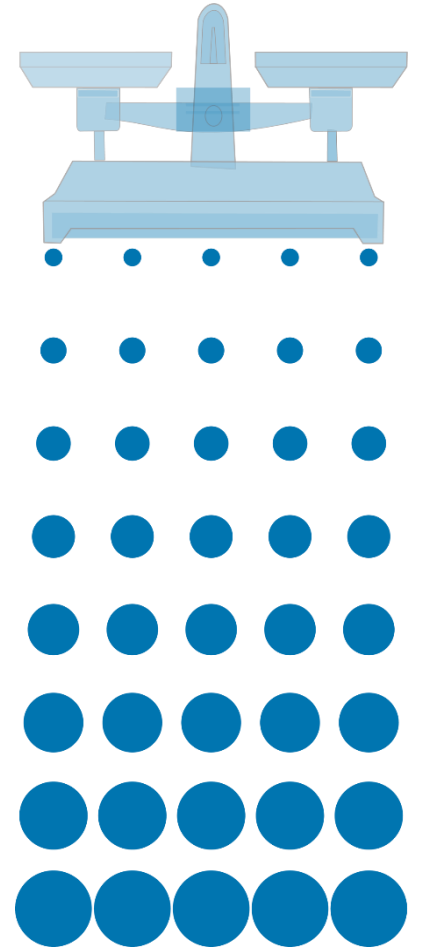
Making Use of Process Data

- Computer based platforms record student interactions with the TIMSS and PIRLS assessments for quality control
 - Making sure test sessions can be completed and are on time
 - Helps finding issues in Field Test
- Computers can record more complex answers
 - In interactive items (PSIs) student responses tend to be 'authentic' (draw, drag, drop, write,...) computer tasks with many response modes
 - These complex responses are just like 'processes', they are interactive, and sequential



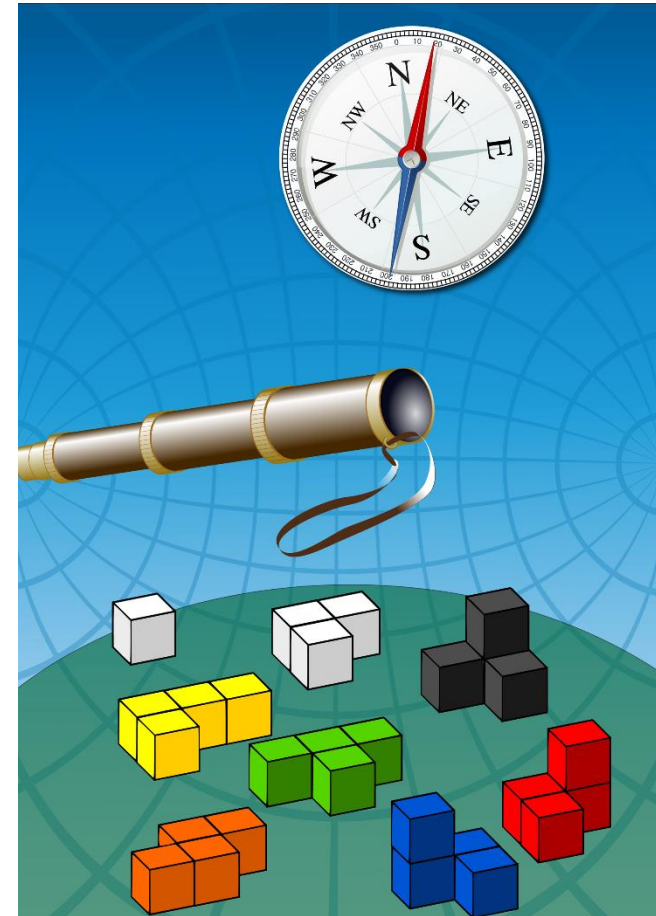
Enhancing Analysis and Scaling Methodology

- Analysis of the 2019 eTIMSS + paper was successful and paved the way for innovations
- Initiative to enhance analytic processes
 - State-of-the-Art Open Source Statistical Tools
 - Flexible Approaches for Checking Analytic Quality and Fit
 - Parallel Processing as Appropriate to Speed up Analyses
 - Models for Analyzing more Complex Response Types
 - Models for Process Data Analysis using Timing and other Indicators



Exploring and Enhancing Methodologies

- Continue long record of research in large scale assessment to address emerging issues, e.g.,
 - Enhancements to context questionnaire analysis methods
 - Improved tools for context scale comparability
 - Improvements to achievement block and booklet assembly
- Boston College supports PhD students to help with TIMSS and PIRLS research
- New staff devoted to research and development
 - Benefitting from process data in QC and reporting
 - Expanding TIMSS and PIRLS, e.g., Rosetta Stone, LaNA



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