TIMSS and PIRLS: IEA's International Large Scale Assessments

Assessment for Educational Reform and Improvement.

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OUTLINE

- WHY ILSA – WHAT IS THE GOAL?
- WHAT AND HOW?
- WHAT CAN WE LEARN FROM THE DATA?
- WHAT DO WE NEED TO CONSIDER FOR INTERPRETATION OF LEARNING OUTCOMES?

Impetus for ILSA

- Growing demand for data/evidence based policy development.
- Growing concerns related to quality of outcomes, equity, efficiency- move away from focus on inputs.
- Globalization and changing economic base from industrialized to knowledge based economies.

The Demand for evidence

- “At all levels in an educational system, from the teacher in the classroom, through the administrator to the policymaker, decision have continually to be made, most of the time on the basis of very little factual information’ (Postlethwaite, 1974).

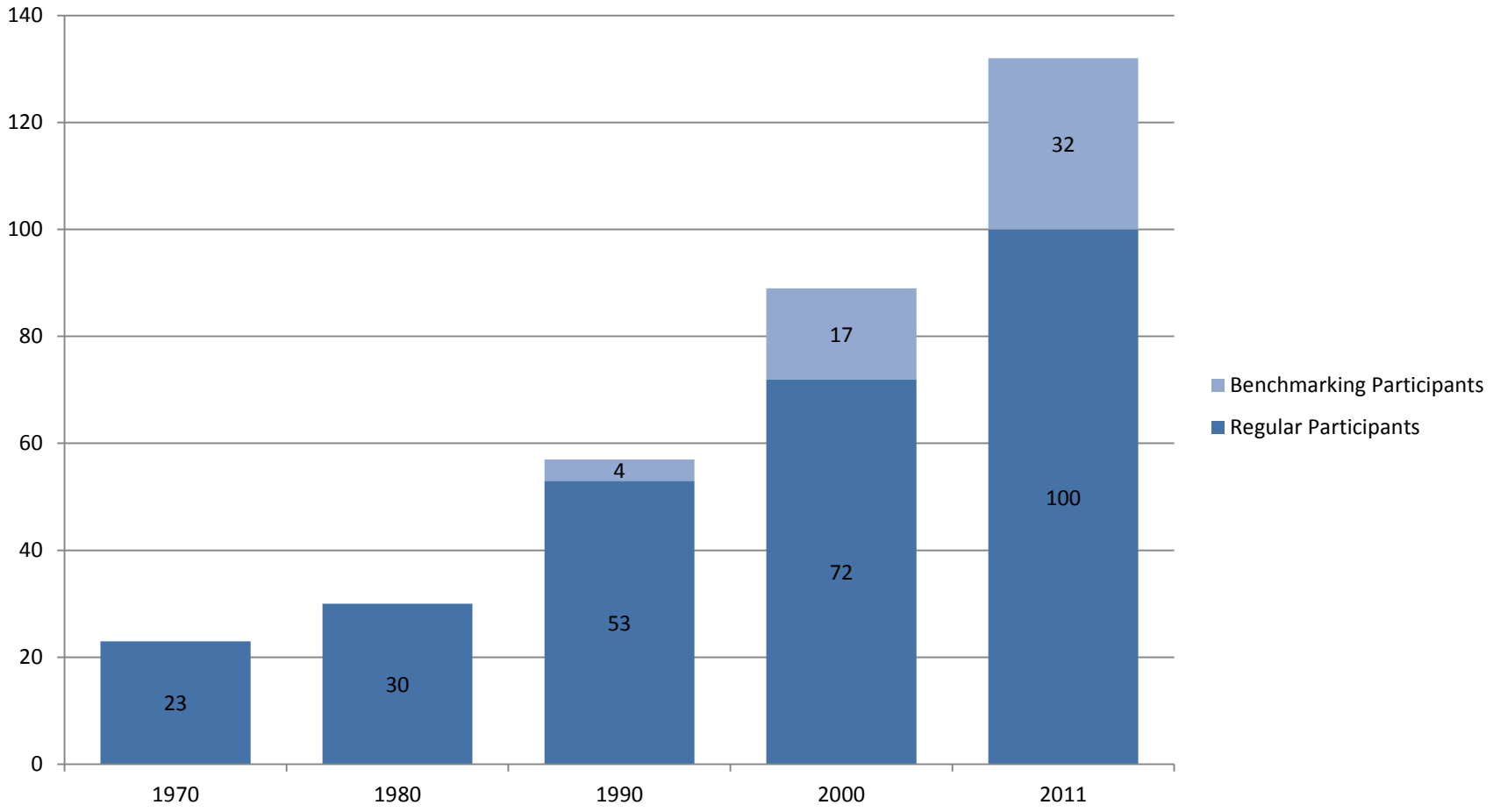
Why International Comparisons

- "If custom and law define what is educationally allowable within a nation, the educational systems beyond one's national boundaries suggest what is educationally possible"(Foshay 1962:p. 2).

The Growth of ILSA

- Decades since the mid 80's growth in Providers
- IEA:TIMSS, PIRLS, pre-PIRLS , e-PIRLS, ICILS ICCS, TED's-M
- OECD PISA, TALIS, PIACC
- UNESCO: LLECE, SACMEQ
- CONFENMEN: PASEC
- Increased diversity – economic, cultural, linguistic

Cumulative growth in unique IEA participants over the decades (beginning of each decade)



The Goal (s) of ILSA

Analysis beyond the mean and International Rankings.

Intended to provide insights into factors contributing to our understanding of outcomes.

Needs to be integrated with contextual information.

Needs to be understood as both process and product.

Design

- Grade Based Representative Probability Sample.
- Key Transition Points (viz. PIRLS)
- Content and Cognitive Domains
- Curriculum Model- intended, implemented, achieved curriculum Knowledge, Attitudes, Skills, Dispositions- POLICY FOCUS
- Comprehensive background data, Country, School, Teacher, Student, Parent
- Trend Design.

Design

BIB Spiral Design

3 Parameter Rasch Model full imputation

14 booklets, 2 blocks 1 math 1 science

350 items 4^{th} Grade 450 items 8^{th} Grade

.

Execution

Consortium Boston College, Statistics Canada, IEA Secretariat and DPC with ETS

Collaborative network – National Research Coordinators

Expert Development Groups

Translation Verification and Quality Control

TIMSS & PIRLS Assessment(s)

TIMSS Grade 4 8 and 12 (Advanced).

TIMSS Numeracy – 4 year cycle

PIRLS Grade 4

Pre-PIRLS

e-PIRLS

5 year cycle

2016 Reading Framework

2015 Mathematics Framework

	%	40%
Reasoning	20%	25%

TIMSS 2016 Science Framework

Reporting Strategy

- Achievement Outcomes- overall, sub-domains, achievement benchmarks, relationship with background scales
- Encyclopedia
- Thematic Reports
- Technical Reports
- International Databases
- Released Materials

TIMSS & PIRLS 2011 Score Range

SUBJ	COUNTRY	SCORE	Country	Score G6/9
G4M	Singapore	606		
G4M	Yemen	248	Yemen	348
G8M	Korea	613		
	Ghana	331	Honduras	338
G4S	Korea	613		
	Yemen	209	Yemen	345
G8S	Singapore	590		
	Ghana	306	Ghana	332
Reading	Hong Kong	571		
	Morocco	310	Botswana	419

US TIMSS and PIRLS Rankings 2011

Mathematics G4	**11**	**541**
Mathematics G8	9	509
Science G4	7	544
Science G8	10	525
Reading	6	556

TIMSS Mathematics Grade 8

Massachusetts	**561**
Minnesota	545
North Carolina	537
Indiana	522
Colorado	518
Connecticut	518
Florida	513
California	493
Alabama	466

TIMSS Science Grade 8

Massachusetts	**567**
Minnesota	553
Colorado	542
Indiana	533
Connecticut	532
North Carolina	532
Florida	530
California	499
Alabama	485

Italy	480 (3.0)	8	13.9	0.941
Malaysia	474 (5.0)	8	14.3	0.811
Norway	469 (2.0)	8	13.8	0.968
Cyprus	465 (1.6)	8	13.8	0.903
Bulgaria	464 (5.0)	8	14.9	0.824
[3] Israel	463 (3.9)	8	14.0	0.932
Ukraine	462 (3.6)	8	14.2	0.788
Romania	461 (4.1)	8	15.0	0.813
Bosnia and Herzegovina	456 (2.7)	8 or 9	14.7	0.803
Lebanon	449 (4.0)	8	14.4	0.772
Thailand	441 (5.0)	8	14.3	0.781
Turkey	432 (4.8)	8	14.0	0.775
Jordan	427 (4.1)	8	14.0	0.773
Tunisia	420 (2.4)	8	14.5	0.766
[1] Georgia	410 (5.9)	8	14.2	0.754
Iran, Islamic Rep. of	403 (4.1)	8	14.2	0.759
Bahrain	398 (1.6)	8	14.1	0.866
Indonesia	397 (3.8)	8	14.3	0.728
Syrian Arab Republic	395 (3.8)	8	13.9	0.724
Egypt	391 (3.6)	8	14.1	0.708
Algeria	387 (2.1)	8	14.5	0.733
Colombia	380 (3.6)	8	14.5	0.791
Oman	372 (3.4)	8	14.3	0.814
Palestinian Nat'l Auth.	367 (3.5)	8	14.0	0.731
Botswana	364 (2.3)	8	14.9	0.654
◖◗ Kuwait	354 (2.3)	8	14.4	0.891
El Salvador	340 (2.8)	8	15.0	0.735
Saudi Arabia	329 (2.9)	8	14.4	0.812
Ghana	309 (4.4)	8	15.8	0.553
Qatar	307 (1.4)	8	13.9	0.875
‡ Morocco	381 (3.0)	8	14.8	0.646

SOUR

TIMSS 2011 Grade 4

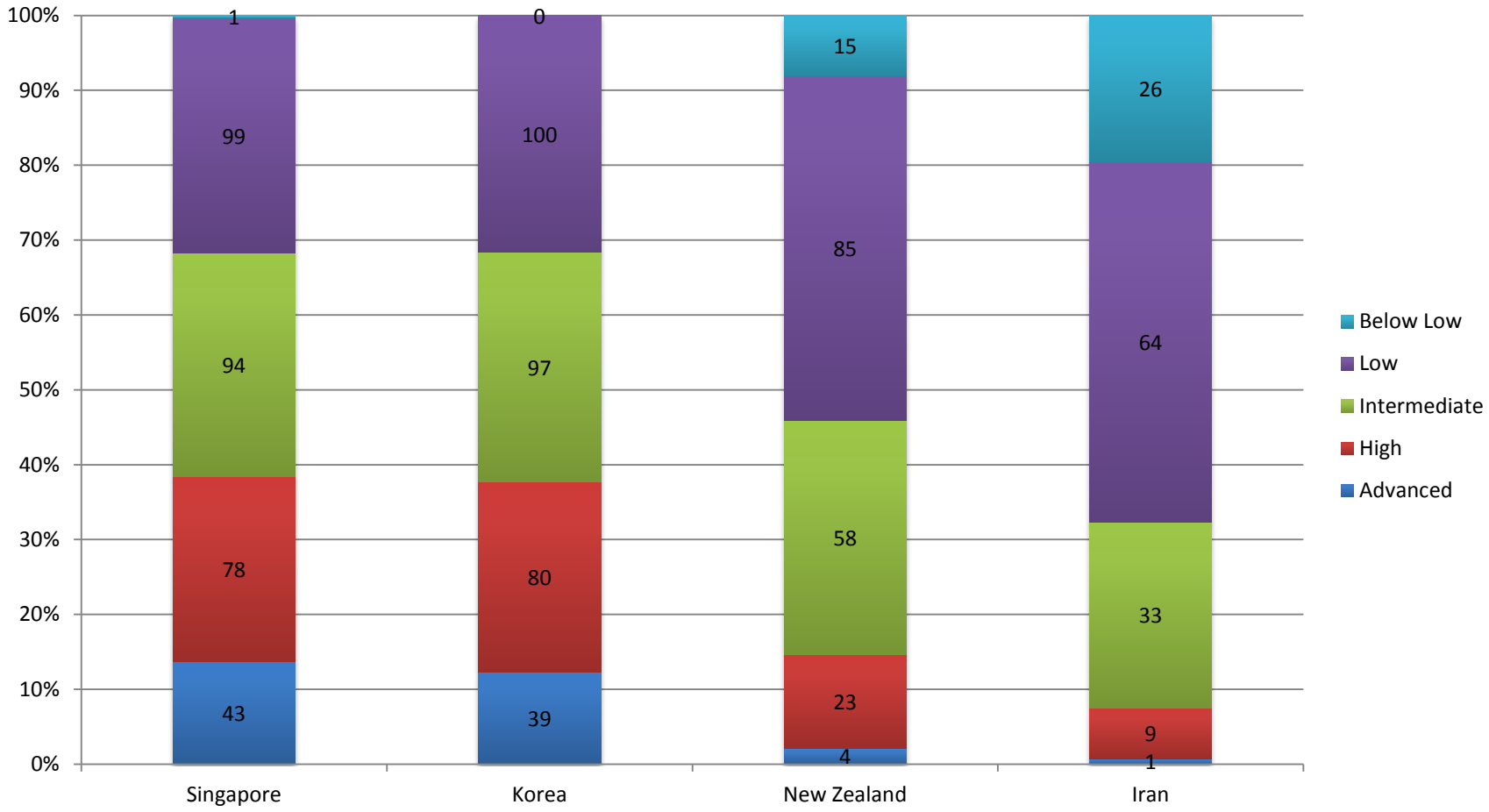
US Grade 4 Mathematics TRENDS

US Grade 8 Mathematics TRENDS

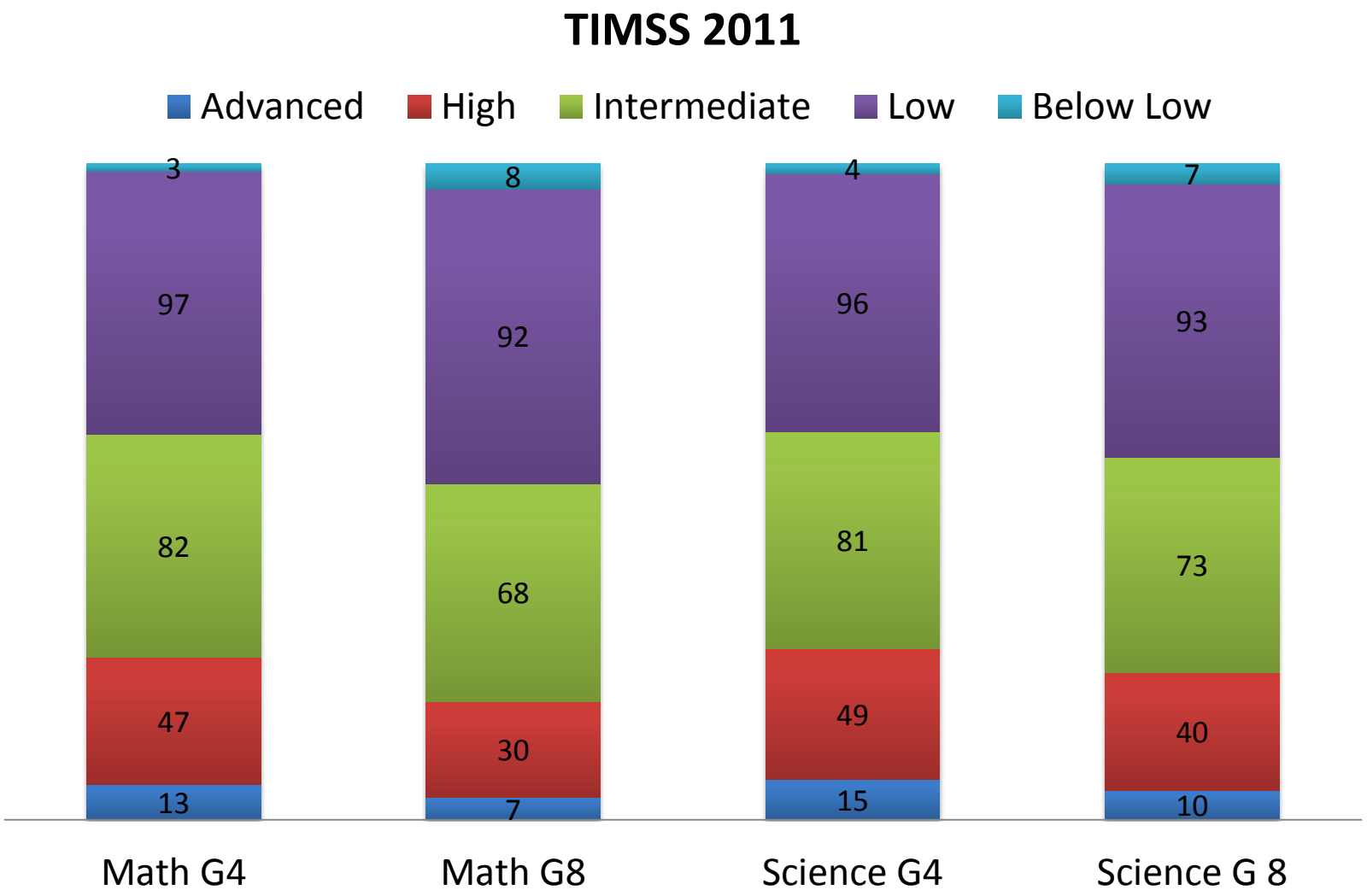
Grade 4 Mathematics Advanced and Low International Benchmark

- Advanced 625: Students can apply their understanding in a variety of relatively complex situations and explain reasoning …Can solve multi step problems involving whole numbers and proportions … increased understanding of fractions and decimals
- Low 400: Some basic mathematical knowledge- can add and subtract whole numbers read and complete simple graphs

Percentage of G4 mathematics population reaching international benchmarks-TIMSS 2011



US Benchmark Performance



2011

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TIMSS 2011
Mathematics

TIMSS 2011 Mathematics 8th Grade

atics Cognitive Domains by Gender

TIMSS 2011 Mathematics 4th Grade

The Challenge of Enhancing Impact

- Detail is important- understand purpose
- Thinking globally analysing/acting locally
- ILSA as process and product
- Integration of Framework, Encyclopaedia, Background data, Technical reports. Quality Assurance procedures, Training
- Need strategic investment/vision/ownership
- Enhance basic template.
- Training
- Policy -Research integration

Thank you

Information www.iea.nl

www.isc.bc.edu

2016 TIMSS Numeracy

Exhibit 1.1: Distribution of Reading Achievement