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United Nations
Educational, Scientific and
Cultural Organization

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Measuring ICT in Education in Asia and the Pacific:

The UIS role and its approach to data collection

ITU/NBTC Regional Forum and Training Workshop on Telecommunication/ICT Indicators: Measuring the Information Society and ITU/ASEAN Meeting on Establishing National ICT Statistics Portals

13-16 October 2014, Bangkok, Thailand

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The UNESCO Institute for Statistics (UIS)

- The UIS was founded as a semi-autonomous institute of UNESCO in 1999; moved from Paris (HQ) to the University of Montreal in 2001
- About 100 staff; 15 in the field
- Mandated to maintain international databases for:
  - Education
  - Science and technology
  - Culture
  - Communication and information

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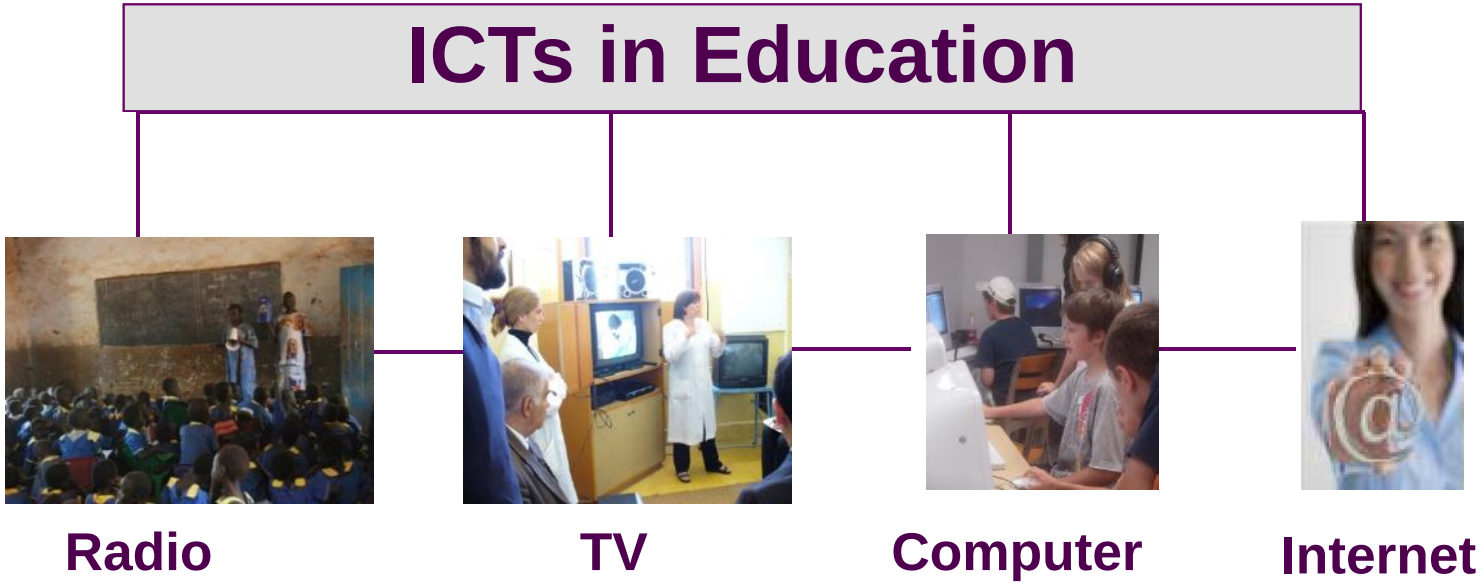
What are the roles of the UIS?

- Collection of administrative national data and subsequent conversion & dissemination of cross-nationally comparable data
- Analysis of comparative data
- Development of international classifications (e.g., ISCED)
- Technical projects to improve data collection towards the production and usage of internationally comparable data
- Technical capacity building within countries (e.g, regional workshops)
- Advocacy for statistics in relation to UNESCO's areas of interest

What do we mean by ICTs in education?

ICTs in education refers to education models that employ ICTs to support, enhance and enable the delivery of education. Any, all or combinations of the following types of ICTs are included.



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Why measure ICTs in education?

- International and regional commitments:
  - WSIS (Geneva, 2003) Plan of Action
  - Education for All (EFA) goals
  - Millennium Development Goals (MDGs), Target 8.F
    - *"In cooperation with the private sector, make available the benefits of new technologies, especially information and communications"*
  - eLAC2010 (Strategy for the Information Society in Latin America and the Caribbean)
  - New Partnership for Africa's Development (NEPAD) *e-schools initiative*
- UNESCO sector demands, vision and mission
- Demands from analytical community
- Partnership on Measuring ICT for Development (ICT4D)

Why measure ICTs in education?

Role of the UNESCO/ UIS

- From the Plan of Action of WSIS, MDGs, EFA & UNESCO mandates
  - UNESCO was assigned to guide policy formulation and methodological work;
  - UIS was assigned to achieve an international data collection with different policy needs;

    → Regional approach

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Partnerships and data collection

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Present partners

- Korea Education Research and Information Service (KERIS)/ Ministry of Education, Science and Technology (MEST) (Korea)
- NIC.br/ CETIC.br (Brazil)
- UNESCO (Bangkok)
- UNESCO Communication and Information Sector
- UNESCO Education Sector
- World Bank
- Talal Abu Ghazeleh Foundation (TAG.org)
- Intel
- Partnership on Measuring ICT for Development (ICT4D)

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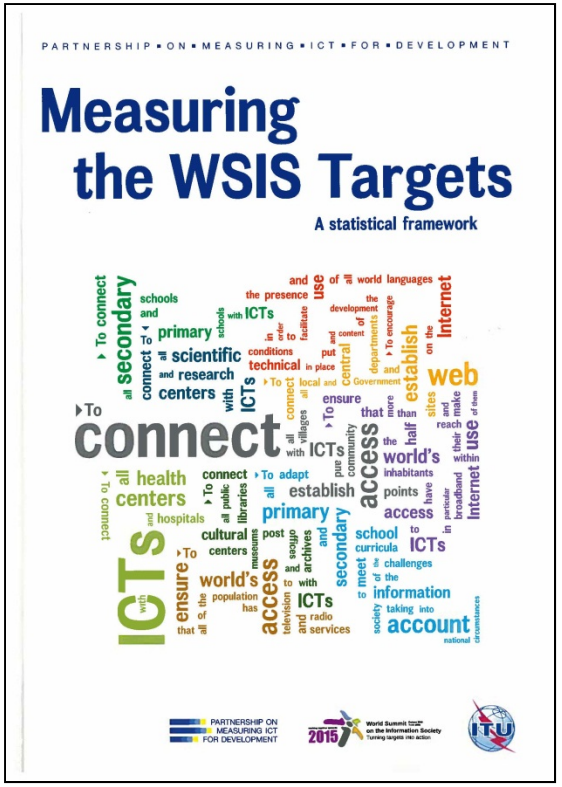
Partnership on Measuring ICT for Development (ICT4D)

World Summit on the Information Society (WSIS)

- As a follow up to the World Summit on Information Society (WSIS), a list of ten targets were identified.
- The Partnership has written a publication on measuring these targets, as well as providing an analytical mid-term review based on pilot data collection

Statistical Framework



Mid-term Review

WSIS targets

1. Connect all villages with ICTs and establish community access points
2. Connect all secondary schools and primary schools with ICTs
3. Connect all scientific and research centres with ICTs
4. Connect all public libraries, museums, post offices and national archives with ICTs
5. Connect all health centres and hospitals with ICTs
6. Connect all central government departments and establish websites
7. Adapt all primary and secondary school curricula to meet the challenges of the information society, taking into account national circumstances
8. Ensure that all the world's population has access to television and radio services
9. Encourage the development of content and put in place technical conditions in order to facilitate the presence and use of all world languages on the Internet
10. Ensure that more than half the world's inhabitants have access to ICTs within their reach and make use of them

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Working group for ICT statistics in education, WISE: Membership

- The UIS established the international **Working Group for Information and Communication Technology Statistics in Education (WISE)** to develop the UIS data collection instrument and Guide to Measuring ICTs in education
- Includes 25 countries
- Development of an initial core of ICT in education indicators:
  - Adopted by the United Nations Statistical Commission (UNSC) through the Partnership on Measuring ICT for Development at its 40th session in February 2009

Arab States	Bahrain
	Egypt
	Jordan
	Morocco
	Oman
	Occupied Palestinian Territory
	Tunisia
East Asia and Pacific	Malaysia
	Republic of Korea
	Thailand
Latin America and the Caribbean	Argentina
	Bolivia
	Costa Rica
	Dominican Republic
	Guatemala
	Paraguay
	Uruguay
Sub-Saharan Africa	Ethiopia
	Ghana
	Mauritius
	Rwanda
	Senegal
Central and Eastern Europe	Belarus
	Russian Federation
	Estonia

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Working group for ICT statistics in education, WISE: UIS and Partnership core indicators

Adopted by the United Nations Statistical Commission (UNSC) through the Partnership on Measuring ICT for Development at its 40th session in February 2009

ED1	**Proportion of schools with a radio used for educational purposes (for ISCED level 1-3)**
ED2	**Proportion of schools with a TV used for educational purposes (for ISCED level 1-3)**
ED3	**Proportion of schools with a telephone communication facility (for ISCED level 1-3)**
ED4	**Learner-to-computer ratio in schools with CAI (for ISCED level 1-3)**
ED4. bis	**Learner-to-computer ratio (for ISCED level 1-3)**
ED5	**Proportion of schools with Internet access at school, by type (for ISCED level 1-3)** • Fixed narrowband Internet access (using modem dial-up, ISDN) • Fixed broadband Internet access (DSL, cable, other fixed broadband) • Both fixed narrowband and broadband Internet access
ED6	**Proportion of learners who have access to the Internet at school (for ISCED level 1-3)**
ED7	**Proportion of learners enrolled by gender at the post-secondary non-tertiary and tertiary level in ICT-related fields (for ISCED level 4 and level 5- 6)**
ED8	**Proportion of ICT-qualified teachers in primary and secondary schools (for ISCED level 1-3)**
EDR1	**Proportion of schools with electricity (for ISCED level 1-3) --- *Reference indicator***

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Target 2:

"C**onnect all secondary and primary schools with ICTs"**

- Four indicators suggested to measure Target 2
- All are existing UIS indicators, with three of them also being Partnership core indicators:
  - Proportion of schools with a radio used for educational purposes
  - Proportion of schools with a television used for educational purposes
  - Learners-to-computer ratio*
  - Proportion of schools with Internet access, by type of access

** Among the Partnership core indicators, the more specific indicator **Learners-to-computer ratio in schools with computer-assisted instruction** is included.*

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Target 7:

"Adapt all primary and secondary school curricula to meet the challenges of the information society, taking into account national circumstances"

- Four indicators suggested to measure Target 7
- All are existing UIS indicators, with one of them also being a Partnership core indicator:
  - Proportion of ICT-qualified teachers in schools
  - Proportion of teachers trained to teach subjects using ICT
  - Proportion of schools with computer-assisted instruction
  - Proportion of schools with Internet-assisted instruction

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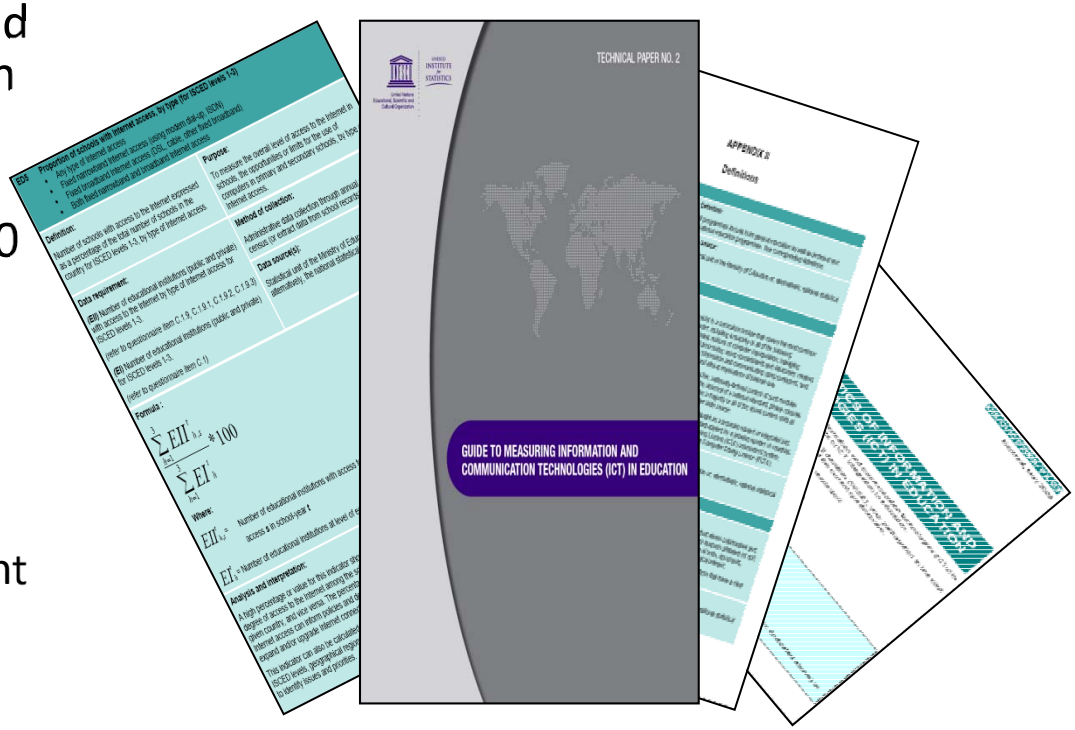
WISE: Beyond the core indicators

- Development of an international questionnaire and instructional manual for ICTs in education
- **Guide to Measuring ICTs in Education**, which covers the 10 core indicators as well as an extended 43 indicators covering:
  - Political commitment
  - Infrastructure
  - Teaching staff and development
  - Curriculum
  - Participation skills and output
  - Outcomes and impact



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Content of the guide on ICTs in education

- Detailed specifications:
  - Statistical definitions
  - Purpose
  - Data requirement
  - Interpretation
  - Methodological issues and limitations
- Serves as methodological reference material and facilitates operational implementation

ED7 Proportion of learners enrolled by gender at the post-secondary non-tertiary and tertiary level in ICT-related fields (for ISCED level 4 and level 5- 6)

Definition:
Number of learners currently admitted in ICT-related fields by gender as a percentage of all learners enrolled in educational institutions in a given country by gender for ISCED level 4 and level 5-6.

Purpose:
To measure the share of learners in ICT-related fields of study in tertiary education institutions.

Data requirement:
(LIT) Total number of learners (by gender) enrolled in ICT-related fields in tertiary education institutions for ISCED level 4 and level 5- 6

(L) Total number of learners (by gender) enrolled in tertiary education institutions regardless of their fields of study for ISCED level 4 and level 5- 6

Method of collection:
Administrative data collection through annual school census (based on school registers).

Data source(s):
Statistical units of ministries of education or, alternatively, national statistical offices.

Formula :

$$\frac{LIT^{t}_{h=4}}{L^{t}_{h=4}} * 100 \quad , \quad \frac{\sum_{h=5}^{6} LIT^{t}_{h}}{\sum_{h=5}^{6} L^{t}_{h}} * 100$$

Where:
LIT^{t}_{h} = Enrolment of learners (by gender) in ICT-related field at tertiary education level ***h*** in school-year ***t***

L^{t}_{h} = Enrolment of learners (by gender) at tertiary education level ***h*** in school-year ***t***

Interpretation:
A high percentage for this indicator may indicate an important demand for ICT-related studies by learners in relation to other fields of study. Compared to its value over time, a rapidly increasing percentage may suggest a fast adaptation to the new information age by a country in the provision of larger training opportunities in ICT-related fields. A computation of this indicator by key sub-categories may be useful to monitor more adequately some specific sub-fields of studies.

Methodological and definition issues or operational limitations:
Further mapping and classificatory work will be required to re-code within the ISCED fields of study those fields that have emerged after 1997.

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Indicators to measure ICT in education

- Selection of indicators based on key principles:
  - Policy-relevance
  - Maximum probability of response
  - Minimise burden and avoidance of duplication
  - Sustainability
  - Consistency
- For Asia-Pacific region, a regional workshop in Seoul, Republic of Korea, was hold on 5-7 September 2012.
  - The questionnaire was designed to answer the main core indicators and add the specific relevant indicators for the region.
  - Capacity building of the countries

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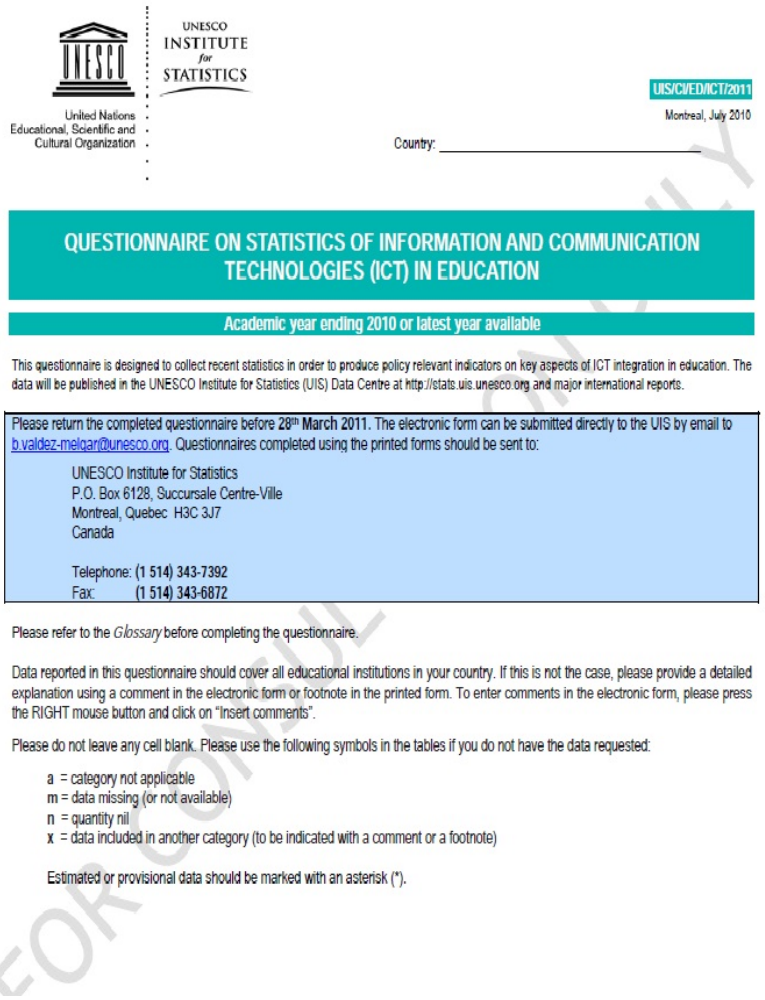
Questionnaire on Statistics of ICT4Ed



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UIS/CI/ED/ICT/2011

Montreal, July 2010

Country: _____

QUESTIONNAIRE ON STATISTICS OF INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT) IN EDUCATION

Academic year ending 2010 or latest year available

This questionnaire is designed to collect recent statistics in order to produce policy relevant indicators on key aspects of ICT integration in education. The data will be published in the UNESCO Institute for Statistics (UIS) Data Centre at http://stats.uis.unesco.org and major international reports.

Please return the completed questionnaire before 28th March 2011. The electronic form can be submitted directly to the UIS by email to b.valdez-melgar@unesco.org. Questionnaires completed using the printed forms should be sent to:

UNESCO Institute for Statistics
P.O. Box 6128, Succursale Centre-Ville
Montreal, Quebec H3C 3J7
Canada

Telephone: (1 514) 343-7392
Fax: (1 514) 343-6872

Please refer to the *Glossary* before completing the questionnaire.

Data reported in this questionnaire should cover all educational institutions in your country. If this is not the case, please provide a detailed explanation using a comment in the electronic form or footnote in the printed form. To enter comments in the electronic form, please press the RIGHT mouse button and click on "Insert comments".

Please do not leave any cell blank. Please use the following symbols in the tables if you do not have the data requested:

a = category not applicable
m = data missing (or not available)
n = quantity nil
x = data included in another category (to be indicated with a comment or a footnote)

Estimated or provisional data should be marked with an asterisk (*).

Coverage:

- Focuses on primary and secondary (**ISCED 1- 3**)
- **Public & private** institutions

Indicator prioritization:

1. Based on policy relevance (pilot experience 2009 -WISE)
2. Regional specificity (partner consultation incorporates new items)
3. Minimizes burden on country respondents

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The questionnaire…

Covers three levels of education (ISCED 1-3) for each sections:

- **Section A**: Policy and Curriculum
- **Section B:** Educational expenditures in ICT4Ed
- **Section C**: Educational institutions and ICT infrastructure
- **Section D**: Enrolment
- **Section E**: Teachers

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Section A : Policy and Curriculum

- What policies and systems are in place to promote effective use of ICT in education?
- What policies/plans/provisions are in place to integrate ICT into education systems?
- Are ICTs part of curriculum reform?

Indicators calculated (examples):

- Proportion of ISCED levels/ grades covered by existing national policies for ICT in education
- Proportion of ISCED levels that include basic computer skills in the standard curriculum

Section B : Educational expenditures in ICT4Ed

- How much is spent on ICT in education?

Indicators calculated (example):

- Proportion of capital expenditure spent on ICT in education

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Section C: Educational Institutions and ICT infrastructure

- Do schools have infrastructure to support ICTs in education?
- Do children participate in education programmes using various types of ICTs?

Indicators calculated: (examples)

- Proportion of educational institutions with radio-assisted instruction (RAI)
- Proportion of educational institutions with computer-assisted instruction (CAI)
- Enrolment in programmes offering television-assisted instruction (TAI)
- Enrolment in programmes offering Internet-assisted instruction (IAI)

Section D: Enrolment

- Do schools have enough computers for all pupils?
- Are computers connected to the Internet?

Indicators calculated: (examples)

- Ratio of learners to computers for pedagogical use
- Ratio of learners to computers connected to the Internet
- Enrolment having access to programmes offering different ICT-related services
- Enrolment that has access to courses offering basic computer skills

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Section E: teachers

- Do education systems train teachers to instruct pupils on basic computing skills?
- Do education systems train teachers to teach different subjects using ICTs?
- Do education systems train teachers using ICT-enabled distance education programmes?

Indicators calculated :

- Percentage of teachers trained via ICT-enabled distance education programmes
- Percentage of teachers who teach basic computer skills
- Percentage of teachers who teach subject(s) using ICT facilities

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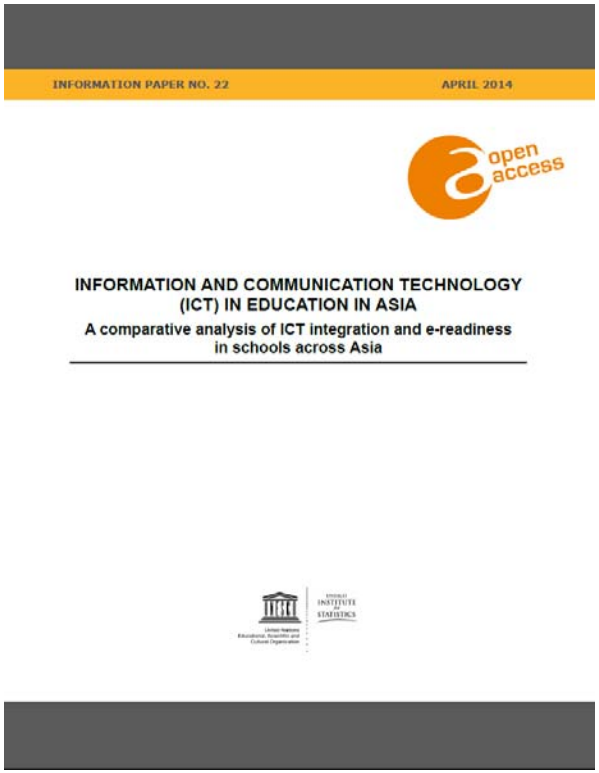
Reports with data on Asia

- UIS ICT in education report on Asia (2013)
- Final WSIS Targets Review (2014); Two chapters focusing on ICT and education



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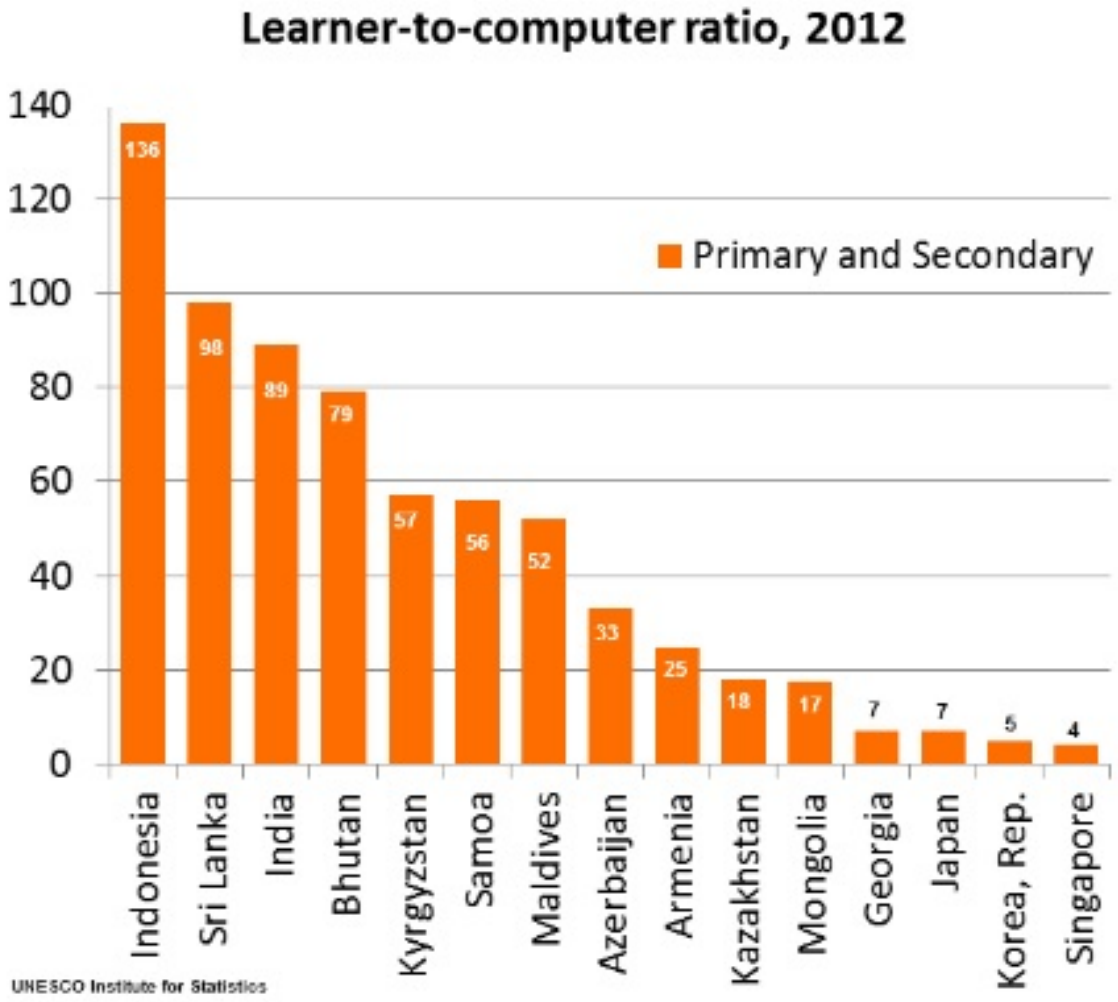
Learner-to-computer ratio, 2012



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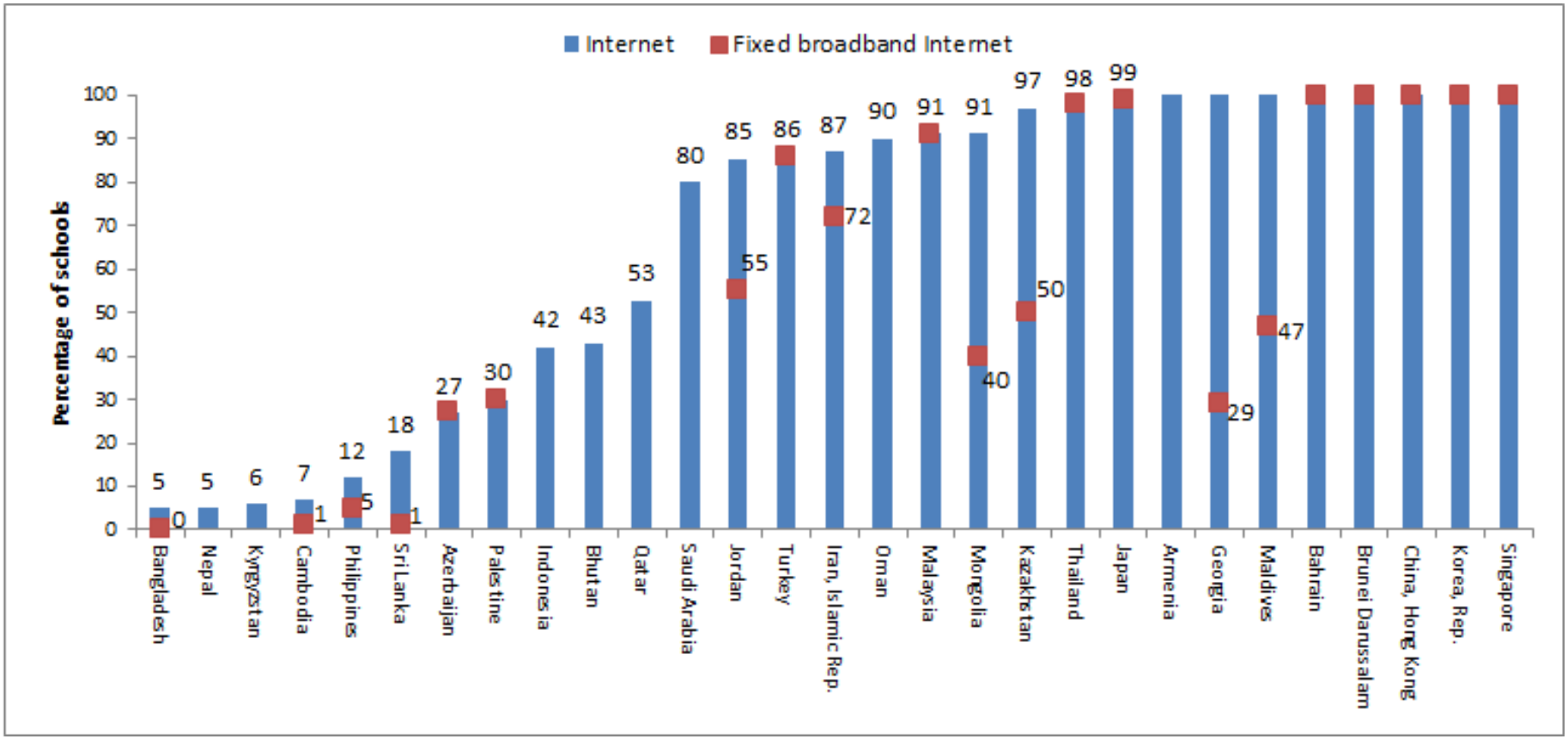
Proportion of schools with Internet/ fixed broadband



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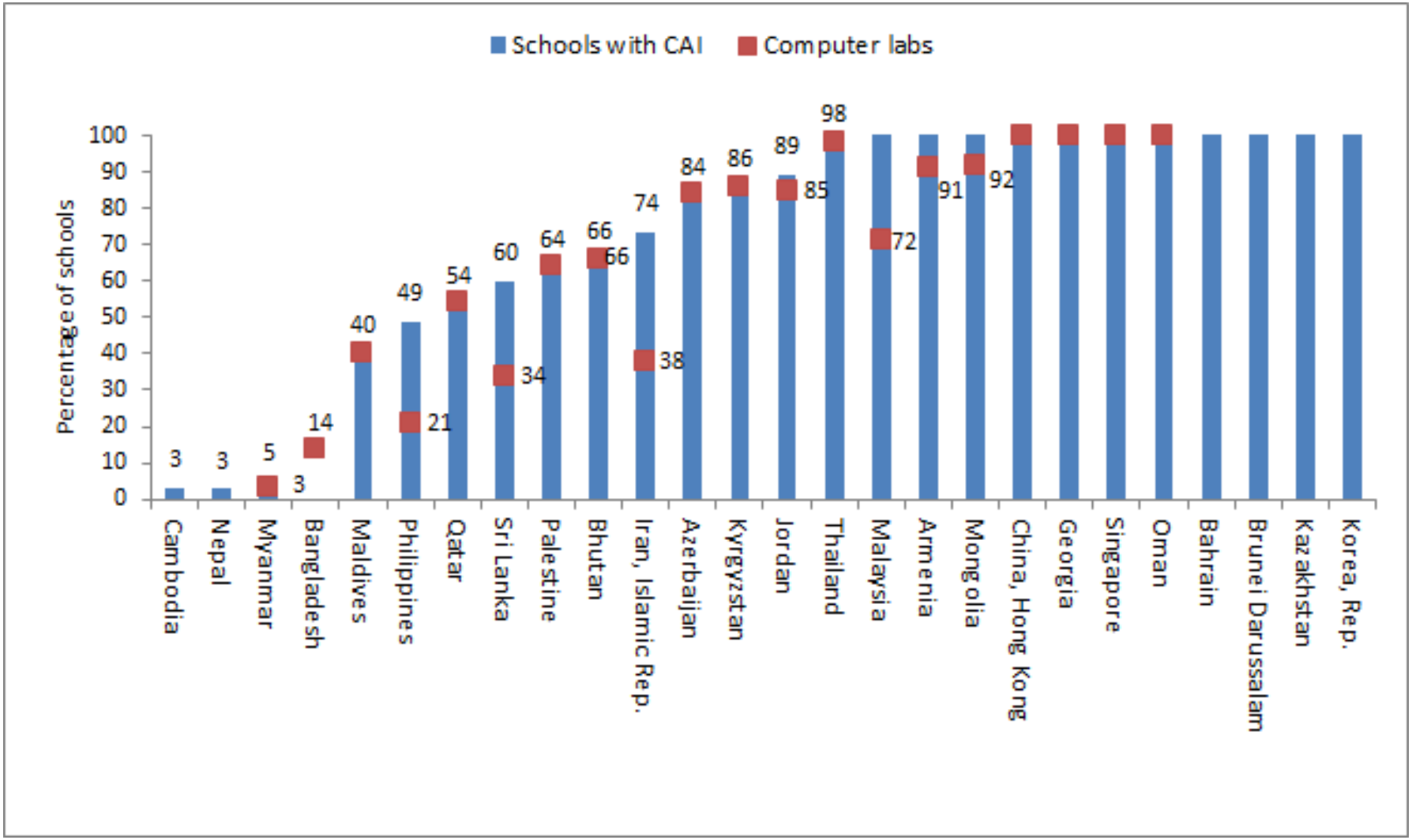
Proportion of schools with computer-assisted instruction/ computer labs



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WAY FORWARD

- 2014 (4th quarter): Technical advisory panel (TAP) meeting in Paris 9-10 December to reflect on regional data collections including Asia (2012/2013)
- 2015: Survey redesign and identification of new list of core ICT in education indicators
- 2015 (3rd quarter): First global data collection on ICT in education
- 2016: Data analysis and data dissemination

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THANK YOU

For more information on UIS statistics on ICT in education, please visit the UIS website:

www.uis.unesco.org