Internationally comparable statistics on ICT in education: The role of the UIS

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Outline

- UIS mandate
- Why measure ICT in education?
- What and how to measure ICT in education
- Data and outputs
- Moving forward
UNESCO Institute for Statistics

- Founded in 1999 in Paris
- Relocated to Montreal in 2001
- Located at Université de Montréal
- Mandated to maintain international databases for:
  - Education
  - Science, technology and innovation
  - Culture
  - Communication and information

www.uis.unesco.org
**UIS mandate**

- Collection and dissemination of cross-nationally comparable data
- Analysis of comparative data
- Development of international classifications/frameworks
- Technical capacity building within countries
- Advocacy for statistics in relation to UNESCO’s areas of interest
UIS data are widely used for:

UIS publications

- Thematic reports
- Factsheets
- Information notes
- Technical papers

UIS on-line data centre

Over 1,000 types of indicators and raw data on education, literacy, science and technology, culture and communication from more than 200 Member States and international organizations

Other international high-profile publications
UIS data are used to measure key development issues

Human Development Index
Gender Inequality Index
Education for All
Knowledge Index
Knowledge Economy Index

ICT Development Index

Global Gender Gap
Global Innovation Index
Why measure ICT in education?

- Support policy making for ICT in education
- International Commitments and Benchmarking:
  - WSIS (Geneva, 2003) Plan of Action
  - Millennium Development Goals (MDGs)
  - Education for All (EFA) goals
  - Sustainable Development Goals (SDGs) on education and other post-2015 frameworks for monitoring education
- Demands from analytical community
Supporting countries in selecting priorities and designing policies

- Data on ICT in education can be used to:
  - Identification of gaps in infrastructure (e.g. lack of computers, Internet, etc.) that need to be filled to introduce new paradigms of student learning and teaching as related to educational reform;
  - Decide to extend ICT across curriculum leading to expanded skills acquisition, future employability, and lifelong learning;
  - Inform decisions on introducing alternative technologies (e.g. radio, television) to ensure equity in education for marginalized remote populations where infrastructure is lacking; and
  - Identify teacher training needs and gaps in knowledge and skills.
International Commitments and Benchmarking (Pre-2015 context)

- Millennium Development Goals (MDGs) Target 8.F
  - “In cooperation with the private sector, make available the benefits of new technologies, especially information and communications”

- Education for All goals (EFA)
  - While not mentioned explicitly in the Education for All goals (EFA), it is argued they fulfill a pivotal role in their achievement including broadening access, eliminating exclusion, and improving quality in education.

- Conclusion: ICT not represented adequately in the pre-2015 education monitoring framework
World Summit on the Information Society (WSIS)

- Held in Geneva (2003) and Tunis (2005) to discuss a broad range of subjects related to ICT for development.
- Governments agreed on a set of commitments and actions to foster the establishment of an inclusive information society.
- WSIS: Main monitoring mechanism in the pre-2015 context for ICT in education.
- In particular, ten targets were identified in the Geneva Plan of Action; two related to education.
Target 2. Connect all secondary schools and primary schools with ICTs.

- 2.1 Proportion of schools with a radio used for educational purposes;
- 2.2 Proportion of schools with a television used for educational purposes;
- 2.3 Learners-to-computer ratio;
- 2.4 Proportion of schools with Internet access, by type of access.

All collected by UIS
World Summit on the Information Society (WSIS)

- Target 7. Adapt all primary and secondary school curricula to meet the challenges of the information society, taking into account national circumstances.
  - 7.1 Proportion of ICT-qualified teachers in schools;
  - 7.2 Proportion of teachers trained to teach subjects using ICT;
  - 7.3 Proportion of schools with computer-assisted instruction (CAI);
  - 7.4 Proportion of schools with Internet-assisted instruction (IAI).
- All collected by UIS
International Commitments and Benchmarking (Post-2015 context)

- Sustainable Development Goals (SDGs)
  - *Partnership on Measuring ICT for Development* provided a proposal for the inclusion of ICT indicators.
  - UIS proposed ICT in education indicators for inclusion in:
    - Goal 4: Ensure inclusive and equitable quality education and promote life-long learning opportunities for all
    - Goal 5: Achieve gender equality and empower all women and girls; and
    - Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
  - No SDG directly measuring ICT; however it is a cross cutting theme
Endorsed SDG ICT in education indicators

- **Goal 4**: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
  - **Target 4a**: Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all
    - **Indicator 4.a.1**: Proportion of schools with access to: (a) electricity; (b) the Internet for pedagogical purposes; (c) computers for pedagogical purposes; (d) adapted infrastructure and materials for students with disabilities; (e) basic drinking water; (f) single-sex basic sanitation facilities; and (g) basic handwashing facilities (as per the Water, Sanitation and Hygiene for All (WASH) indicator definitions)
Additional potential indicators

- Others important for thematic monitoring include:
  - Schools with broadband Internet
  - Pupil-computer ratios
  - Enrolment in programmes using computers and other ICTs
  - Enrolment in computer skills courses and computing
  - Enrolment/graduation in ICT related fields (tertiary)
  - Teachers trained to use ICT to support effective teaching and learning
Partnership on Measuring ICT for Development

- An international, multi-stakeholder initiative to improve the availability and quality of ICT data and indicators, particularly in developing countries.

- Objectives:
  - Define and analyse internationally comparable ICT indicators and develop methodologies;
  - Support statistical capacity building in developing countries; and
  - Set up a global database on core ICT indicators.

- UIS is an active partner; member of Steering Committee.
Partnership ICT in education core indicators

- ED1 Proportion of schools with a radio used for educational purposes
- ED2 Proportion of schools with a television used for educational purposes
- ED3 Proportion of schools with a telephone communication facility
- ED4 Learners-to-computer ratio in schools with computer-assisted instruction
- ED5 Proportion of schools with Internet access by type of access
- ED6 Proportion of learners who have access to the Internet at school
- ED7 Proportion of learners enrolled at the post-secondary level in ICT-related fields
- ED8 Proportion of ICT-qualified teachers in schools
- EDR1 Proportion of schools with electricity
UIS Technical Guide on ICT in education indicators

- Guide to Measuring ICTs in education, which covers the core indicators as well as an extended 43 indicators covering:
  - Political commitment
  - Curriculum
  - Infrastructure
  - Teaching staff and development
  - Participation, skills and output
  - Outcomes and impact
The UIS has conducted five previous regional data collections between 2010 and 2014 including:

- Latin America and Caribbean (2010)/ 38 countries
- Arab States (2011)/ 5 countries
- Asia (Central, South and West, Eastern, Pacific) (2012)/ 32 countries
- Sub-Saharan Africa (Francophone and Lusophone) (2013)/ 28 countries
- Sub-Saharan Africa (Anglophone) (2014)/ 15 countries

Reports are available online
UIS ICT in education outputs

- UIS database on ICT in education statistics
- Regional reports
- International reports
100 per cent of schools have Internet (fixed broadband) in most high income East Asian, Caribbean, and European countries

Least common in low income and least developed countries (LDCs)

Fixed broadband Internet varies from all to less than 50% of all Internet connections

Some evidence of a leapfrogging phenomenon in some LDCs
Proportion of educational institutions with Internet, sub-Saharan Africa, 2013 or latest year available
- Significant disparities between and within regions.
- Highest ratios in low income countries in Asia and Africa
- Lowest ratios in European and high income East Asian countries
- Can sometimes be considered a proxy for usage in schools; however, relationship is not always clear
- Progress over the decade in developing countries with high level and a sector-wide support
Pupil (learner)-to-computer ratio, sub-Saharan Africa, 2013 or LYA

- Mauritius
- Rwanda
- Botswana
- South Africa
- Comoros
- Gambia
- Burkina Faso
- Zambia
- Sao Tome and Principe
- Niger
- Madagascar

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Participation of pupils in programmes with computers for pedagogical purposes, 2012 or LYA

- Based on those enrolled; does not take into account out-of-school children
- Gender difference are marginal if not non-existent
- These data however do not measure usage!
In most countries, fewer than 10% of teachers are trained to teach basic computer skills.

The proportion trained to teach using ICT varies much more widely and may or may not reflect the level of ICT infrastructure in the education system.

Proportions of trained teachers are highest in high income and lowest in low income countries.

Caveat: Definitions of training vary by country.
Current work program (1)

- Technical advisory panel (Dec 2014) called for broadening as well as sharpening UIS indicators, thus requiring:
  - Redesign for survey of administrative data
  - New list of core indicators
  - 1st global data collection (soon)
Global questionnaire

- ICT1: ICT infrastructure in schools by level of education - all programmes (general and vocational)
- ICT2: Students and ICTs by level of education and sex - all programmes (general and vocational)
- ICT3: Computers allocated to schools by level of education - all programmes (general and vocational)
- ICT4: Teaching staff and ICTs by level of education and sex - all programmes (general and vocational)
Current work program (2)

- Capacity-building workshops in 2016:
  - Latin America and Caribbean
  - Arab States
- Update core indicators
- Design of new surveys:
  - Usage - efforts underway between UIS, UNESCO regional bureaux, CETIC.Br (Brazil)
  - Open Educational Resources (with UNESCO HQ)
Current work program (3)

- Develop a better indicator for SDG 4.4
  - By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship
  - Endorsed indicator is 4.4.1 Proportion of youth and adults with information and communications technology (ICT) skills, by type of skill
Conclusion

- Many synergies with the regional project: “Building Tools to Measure the Use of ICT in the Classroom”
- Collaboration would be fruitful and essential
Thank you!

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