Role of the UNESCO Institute for Statistics (UIS) in ICT in education statistics

ICT in Education Technical Advisory Panel
Paris, France
9-10 December 2014
UNESCO Institute for Statistics

- Founded in 1999 in Paris
- Relocated to Montreal in 2001
- Located on the campus of Université de Montréal
- Has grown from 8 to 100 employees
- 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
Field presence
Regional teams in: Bangkok, Dakar, Santiago
Cluster advisors in: Doha, Nairobi, New Delhi, Harare, Yaoundé
Statistical advisor: Apia
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?

- UNESCO sector demands, vision and mission
- Support policy making
- Demands from analytical community
- International Commitments and Benchmarking:
  - WSIS (Geneva, 2003) Plan of Action
  - eLAC2010 (Strategy for the Information Society in Latin America and the Caribbean)
  - Education for All (EFA) goals
  - Millennium Development Goals (MDGs)
- Partnership on Measuring ICT for Development
Why measure ICT in education?

- To support countries in choosing education priorities and developing policies
  - Improving student learning and teaching as related to educational reform;
  - Enhancing curricula to improve student outcomes (achievement, survival rate, graduation);
  - Expanding learning opportunities and ensuring equity for inclusive education (targeting marginalized groups);
  - Enhancing learners’ employability and for diversity of life skills;
  - ICT integration in education with private partnerships.
Why measure ICT in education?

International Commitments:

- 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 (EFA) goals
  - 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.
Why measure ICT in education?

International commitments:
- WSIS Targets on education and their related indicators
  - 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.
Why measure ICT in education?

International commitments:

- WSIS Targets on education and their related indicators
  - 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).
Why measure ICT in education?

Regional commitments:
- eLAC 2015: Connect all schools to the Internet (preferably by broadband) by 2015.

National commitments:
- Kazakhstan to train all teachers to be able to teach using ICTs and to supply 48% of schools with interactive whiteboards by 2014;
- Azerbaijan, where computer-assisted instruction (CAI) was available in 84 per cent of schools in 2012, aims to provide a computer classroom to every school (that is, CAI in 100 per cent of schools) (ADB, 2012);
- Georgia (Deer Leap Programme/ “Georgia without Poverty”) to provide access to computers and the Internet in all schools;
- In South Africa, to connect all schools with broadband Internet by 2020 (Department of Communications, 2013).
How we measure ICT in education on a cross-national basis

S-CURVE:
Non-linear relationship between information needs at national level and ICT development in education system

- Tracer studies on ICT-skilled students in labor market
- ICT and student achievements
- ICT for lifelong learning
- Expansion of ICT-related fields of studies
- New ICT vocational skills development
- ICT-enhanced content development and innovative pedagogy management
- Access to and use of basic ICT infrastructure
- ICT trained teachers and ICT support staff
- Radio and TV instruction, educational software, e-mail etc.
- Distance education, virtual/open universities, virtual high schools, virtual laboratories and online simulations, digital libraries etc.
- Webcasting, podcasting, video/visio-conferencing, etc.
- Internet-enabled self-learning
- ICT4E and economic productivity

S-CURVE:
Non-linear relationship between information needs at national level and ICT development in education system

Time - Level of education system development - National ICT environment

Information requirements for policy-making

e-readiness

e-intensity

e-impact
Lines of action

- Data collection
- Capacity building
- Standard setting
- Analysis and publications
Regional data collections/reports

- Latin America and Caribbean (2010)/ 38 countries
  - Published in 2012
- Arab States (2011)/ 5 countries
  - Published in 2013
- Asia (Central, South and West, Eastern, Pacific) (2012)/ 32 countries
  - Published in 2014
- Sub-Saharan Africa (Francophone, Lusophone and Anglophone) (2013/ 2014)/ 44 countries
  - To be published in 2015
WISE: developing methodologies and setting standards

- UIS established the international Working Group for ICT Statistics in Education (WISE) to develop the UIS data collection instrument and Guide to Measuring ICTs in education
- Membership included 25 countries
- Development of an initial core of 10 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
## Initial core indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Description</th>
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<tbody>
<tr>
<td>ED1</td>
<td>Proportion of schools with a radio used for educational purposes (for ISCED level 1-3)</td>
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<tr>
<td>ED2</td>
<td>Proportion of schools with a TV used for educational purposes (for ISCED level 1-3)</td>
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<tr>
<td>ED3</td>
<td>Proportion of schools with a telephone communication facility (for ISCED level 1-3)</td>
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<tr>
<td>ED4</td>
<td>Learner-to-computer ratio in schools with CAI (for ISCED level 1-3)</td>
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<tr>
<td>ED4. bis</td>
<td>Learner-to-computer ratio (for ISCED level 1-3)</td>
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</tbody>
</table>
| 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 |
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 10 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
Content of the guide on ICT in education

- Detailed specifications:
  - Statistical definitions
  - Purpose
  - Data requirement
  - Interpretation
  - Methodological issues and limitations

- Serves as methodological reference material and facilitates operational implementation

#### EDS: PROPORTION OF SCHOOLS WITH INTERNET ACCESS, BY TYPE (FOR ISCED LEVELS 1-3)

**Definition:**
Number of schools with access to the Internet expressed as a percentage of the total number of schools in the country for ISCED levels 1-3, by type of Internet access.

**Purpose:**
To measure the overall level of access to the Internet in schools, the opportunities or limits for the use of computers in primary and secondary schools, by type of Internet access.

**Data requirement:**
- (EI) Number of educational institutions (public and private) with access to the Internet by type of Internet access for ISCED levels 1-3.
  - (refer to questionnaire item C.1.9, C.1.9.1, C.1.9.2, C.1.9.3)
- (EI) Number of educational institutions (public and private) for ISCED levels 1-3.
  - (refer to questionnaire item C.1)

**Formula:**
\[
\frac{\sum_{h=1}^{3} EI_{h}}{\sum_{h=1}^{3} EI_{h}} \times 100
\]

Where:
- \(EI_{h}\) = Number of educational institutions with access to the Internet at level of education \(h\) by type of Internet access in school-year \(t\)
- \(EI_{h}\) = Number of educational institutions at level of education \(h\) in school-year \(t\)

**Analysis and interpretation:**
A high percentage or value for this indicator shows a high degree of access to the Internet among the schools in a given country, and vice versa. The percentages by type of Internet access can inform policies and decision-makers to expand and/or upgrade Internet connections in schools.

This indicator can also be calculated and analysed by ISCED levels, geographical regions, and urban/rural areas to identify issues and priorities.

**Methodological and definition issues or operational limitations:**
This indicator measures only the availability of Internet access in schools, and not the intensity of use or the time that learners spend on the Internet for educational purposes.

The type of Internet connection and access in schools may also depend on existing national and sub-national telecommunication infrastructures and may sometimes be constrained by technological limitations.
UIS outputs

- UIS database on ICT in education statistics
- Regional reports
- International reports
Way forward

- Technical Advisory Panel meeting on ICT in education statistics: December 2014
  - Bring together specialists on ICT in education to discuss emerging policy needs and statistical perspectives to collect data in the post-2015 context
  - Will inform the survey redesign and identification of new UIS core indicators

- Global data collection: September 2015
  - UIS to conduct its first global data collection to all UNESCO Member States

- Revised UIS manual on UIS core ICT in education indicators: 2015
Thank you!

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