United Nations Educational, Scientific and Cultural Organization

UNESCO INSTITUTE for STATISTICS

United Nations Educational, Scientific and Cultural Organization

UNESCO Institute for Information Technologies in Education

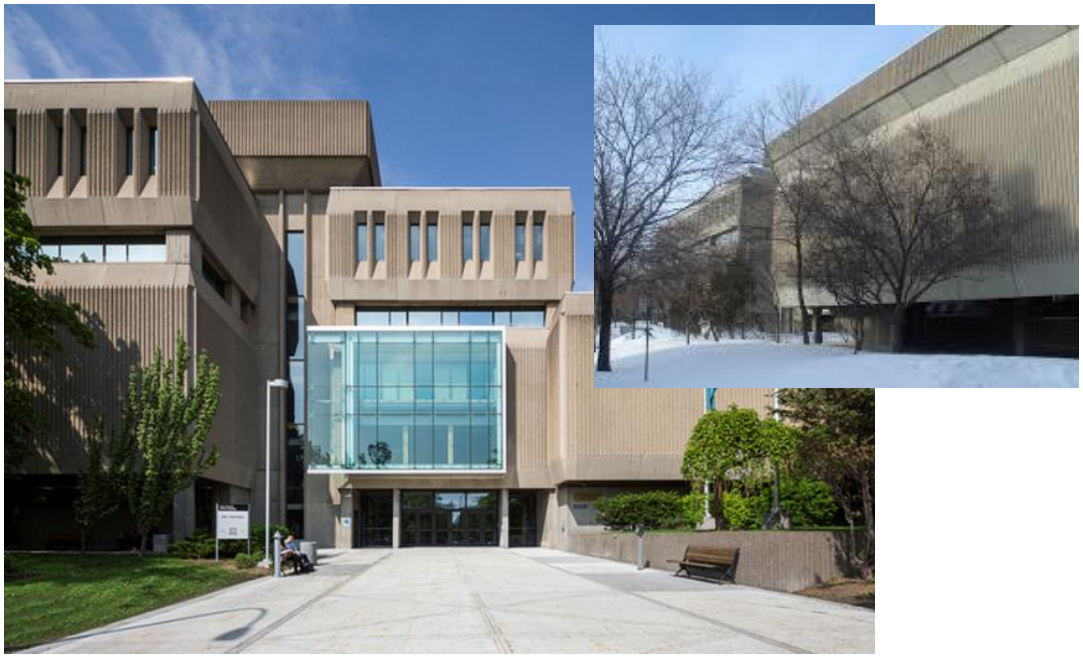
Role of the UNESCO Institute for Statistics (UIS) and the collection of ICT in education statistics

Regional Workshop on ICT in education (ICT4E) Statistics, 2015

Moscow, Russian Federation, 25-27 November 2015

The UNESCO Institute for Statistics (UIS)

- The UIS was founded as a semi-autonomous institute of UNESCO in 1999; moved from HQ in Paris(FRANCE) to the Université de Montréal (CANADA) in 2001
- Approximately 104 staff; 16 in the field
- Mandated to maintain international databases for:
  - Education
  - Science, technology and innovation
  - Culture
  - Communication and information



What is the role of the UIS?

- Collection of national data and subsequent conversion & dissemination of cross-nationally comparable data
- Analysis of comparative data
- Development of international classifications (e.g., ISCED, DQAF)
- Technical cooperation and capacity building in countries
- Advocacy for statistics in relation to UNESCO's areas of competence

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Why measure ICT in education?

- UNESCO sector demands, vision and mission
- Support countries to identify education priorities and develop policy
- Monitoring and benchmarking
- Demands from analytical community
- Partnership on Measuring ICT for Development (ICT4D)

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

- 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
    - Inclusion of proportion of schools with Internet

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.

World Summit on the Information Society (WSIS)

- 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

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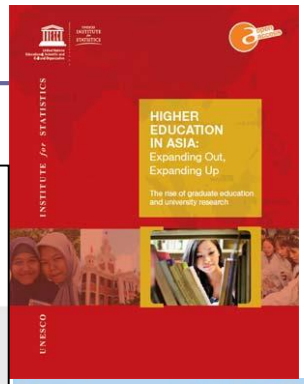
UIS data are widely used for:

UIS publications

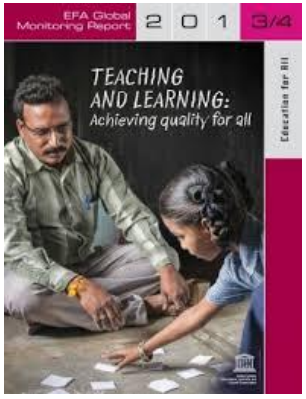
- Thematic reports
- Factsheets
- Information notes
- Technical papers

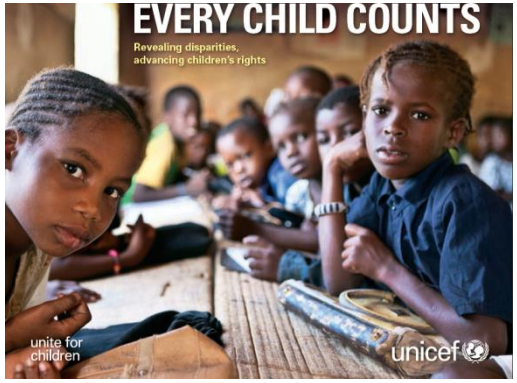


UIS on-line data centre

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

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How do we measure ICT in education on a cross-national basis?

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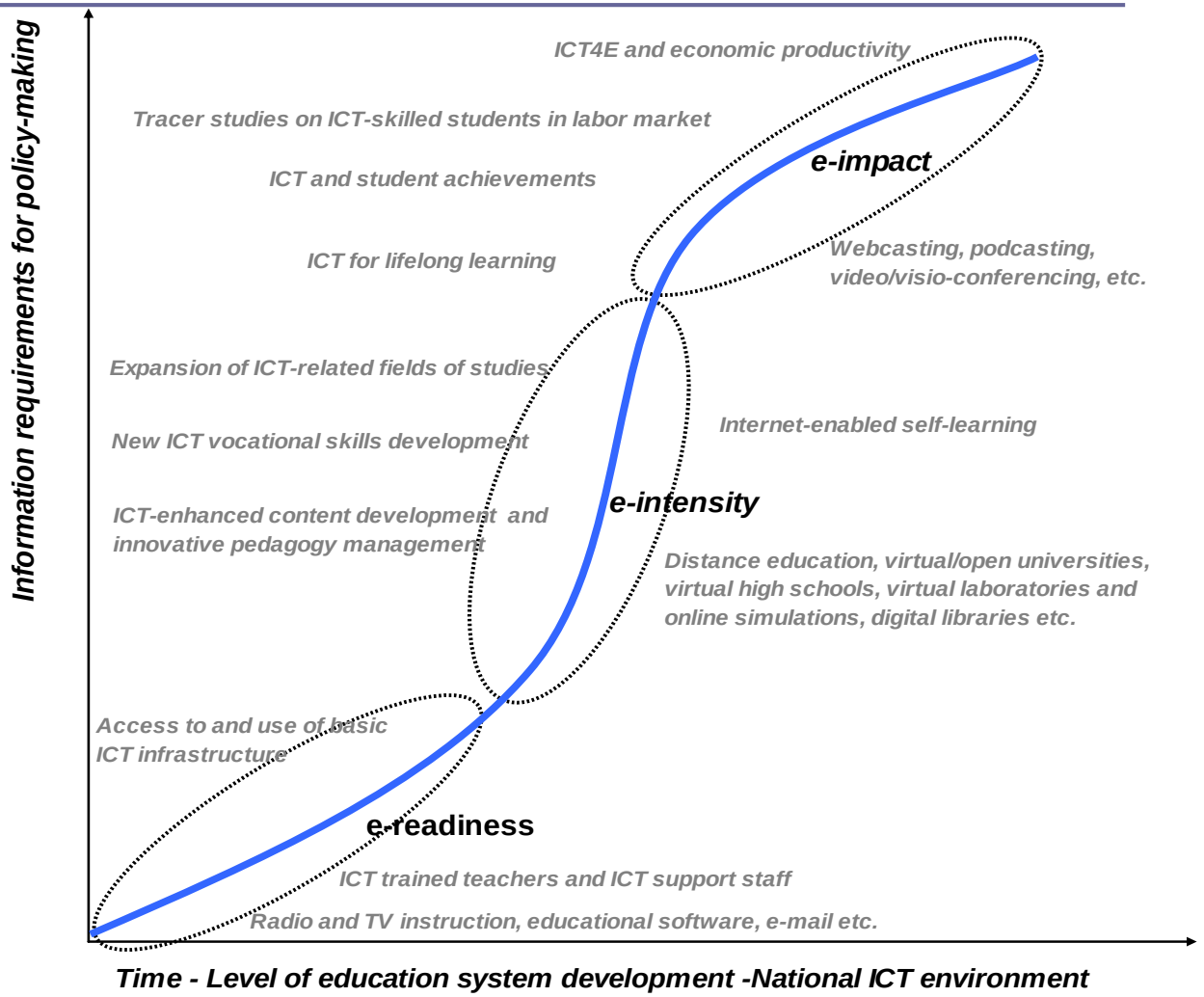
S-CURVE:

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

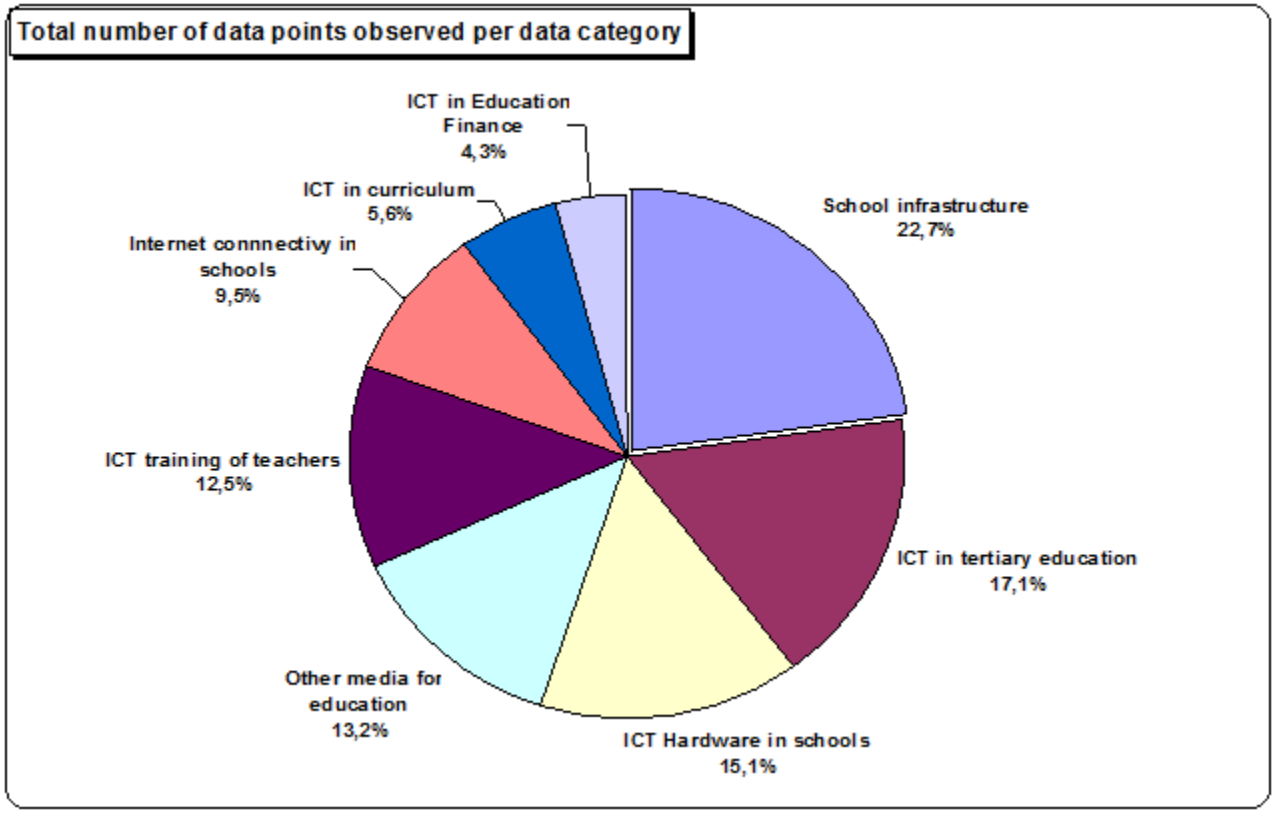


Building an international statistical framework

- How do we achieve an international data collection with differing policy needs (i.e. S-curve)?
  - Reach the greatest common denominator
  - Develop an international working group with countries at different stages of development who will validate and develop an international methodology for a cross-national data collection

Scoping survey (2007): 209 countries

- **Most frequent data:** School infrastructure
- **Least frequent data:** ICT in education finance



WISE: Developing methodologies and setting standards

- UIS established the international **W**orking Group for **I**CT **S**tatistics in **E**ducation (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

Arab States	Bahrain
	Egypt
	Jordan
	Morocco
	Oman
	Palestine
	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

Initial core indicators

- Selection of core indicators based on key principles of good indicators:
  - Policy-relevance
  - Measurability
  - Interpretability
  - Sustainability and consistency over time
  - Capacity to be disaggregated
  - Validity and analytical rigour
  - Feasibility, costs and timeliness
  - Minimise burden and avoidance of duplication

Initial core indicators

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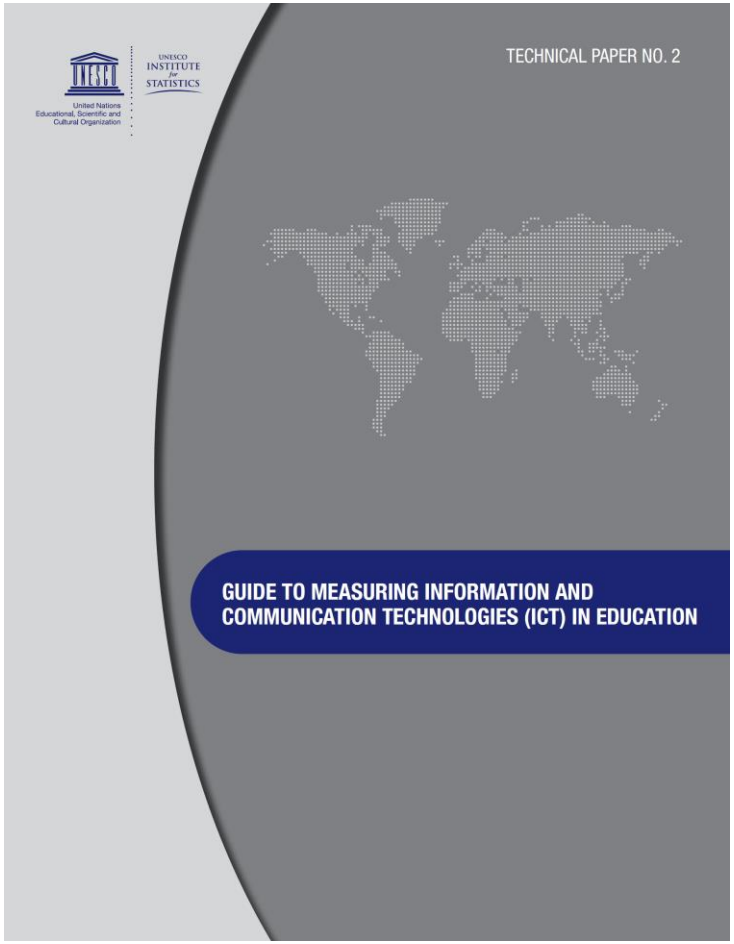
ED1	**Proportion of schools with a radio used for educational purposes (for ISCED level 1-3)**
ED2	**Proportion of schools with a TV used for educational purposes (for ISCED level 1-3)**
ED3	**Proportion of schools with a telephone communication facility (for ISCED level 1-3)**
ED4	**Learner-to-computer 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***

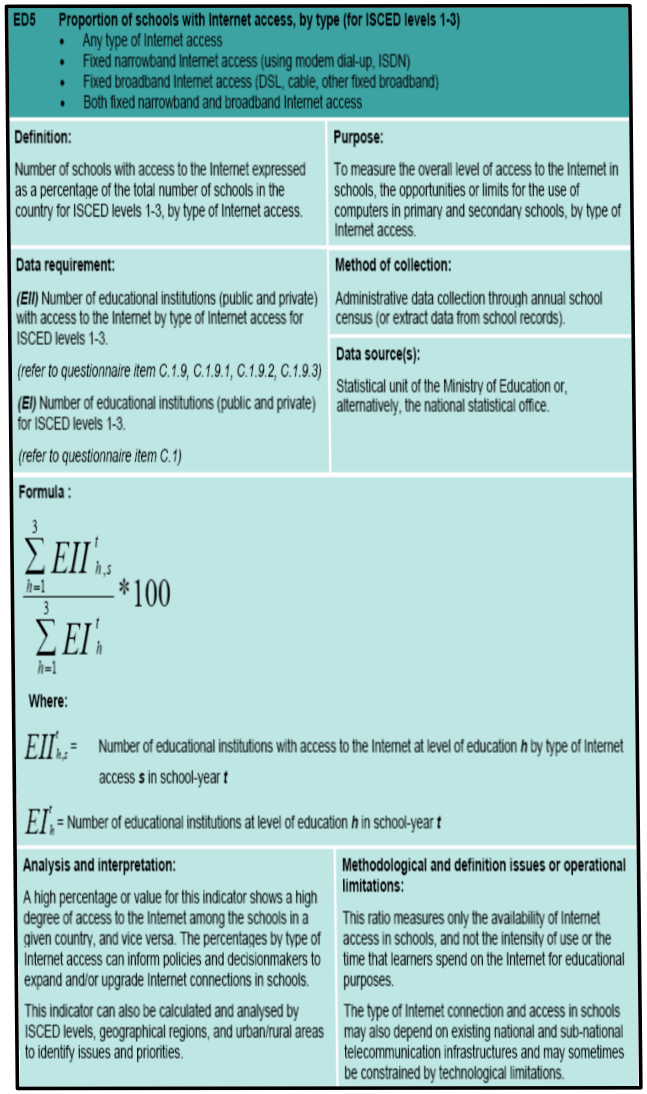
WISE: Beyond the core indicators

- 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



ED5 Proportion of schools with Internet access, by type (for ISCED levels 1-3)

- Any type of Internet access
- 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

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:

(EII) 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)

Method of collection:

Administrative data collection through annual school census (or extract data from school records).

Data source(s):

Statistical unit of the Ministry of Education or, alternatively, the national statistical office.

Formula :

$$\frac{\sum_{h=1}^{3} EII_{h,s}^{t}}{\sum_{h=1}^{3} EI_{h}^{t}} * 100$$

Where:

$EII_{h,s}^{t}$ = Number of educational institutions with access to the Internet at level of education ***h*** by type of Internet access ***s*** in school-year ***t***

EI_{h}^{t} = 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 decisionmakers 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 ratio 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.

Pilot results/ Publications

- High variation in ICT access across countries (i.e. digital divide)
- Developing countries still at e-readiness stage whereas developed countries are at e-impact stage

Publications:

- UNESCO: Towards Inclusive Knowledge Societies
- Joint ITU-UNESCO-WHO-UNDESA: World Telecommunication Development Report – Monitoring the WSIS Targets

Regional data collections/ Reports

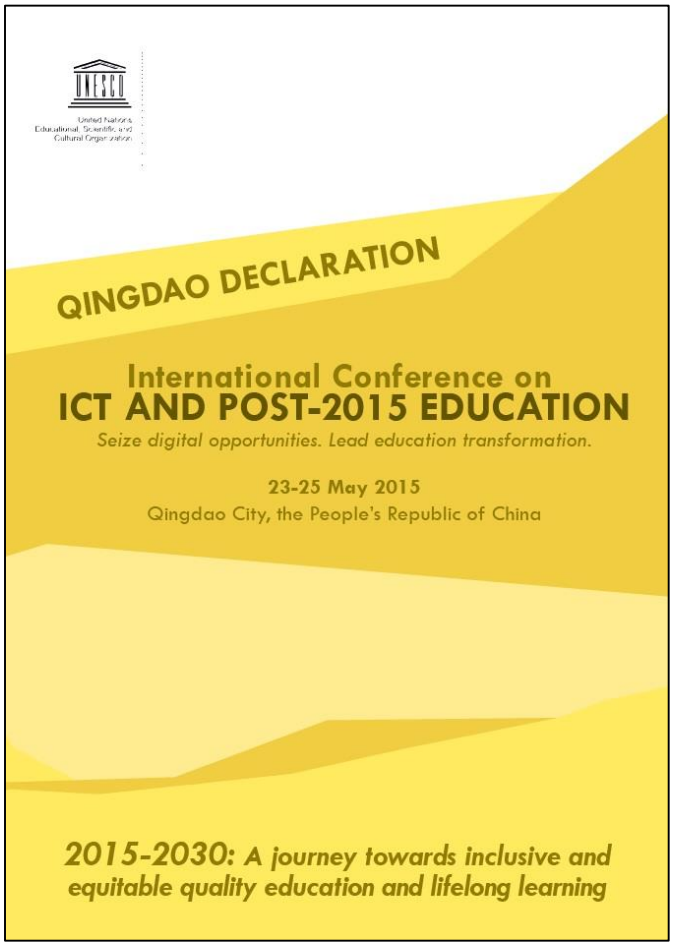
- The UIS has conducted four previous regional data collections between 2010 and 2014 including:
  - Latin America and Caribbean (2010)/ 38 countries
  - Arab States (2011)/ 5 countries
  - Asia (Central, South and West, Eastern, Pacific) (2012)/ 32 countries
  - Sub-Saharan Africa (Francophone and Lusophone) (2013)/ 28 countries
  - Sub-Saharan Africa (Anglophone)/ 15 countries
- **Reports are available online**

Final WSIS targets review (2014)

- The World Summit on the Information Society (WSIS) was held in Geneva (2003) and Tunis (2005), bringing together governments, civil society and the business sector to discuss a broad range of subjects related to ICT for development.
- Governments agreed on a set of ten targets to be met by 2015. Two targets were related to education. UIS was responsible for collecting data and tracking progress related to these targets.
- Final WSIS targets review contains UIS data from both the pilot study and from the regional data collections

International Conference on ICT and post-2015 education in Qingdao, China

- Followed the World Education Forum 2015 in INCHEON, Rep. of Korea
- Brought together about 60 Ministers of Education to discuss important role of ICT in education
- 23-25 May in Qingdao, People's Republic of China



Qingdao Declaration
Monitoring and Evaluation

Article 16.

- “We commit to developing comprehensive national monitoring and evaluation systems to generate sound evidence for policy formulation on the integration, use and impact of ICT in education, in order to enhance the management of education systems, ensure accountability, and understand the key roles that ICT increasingly plays in the transmission of knowledge, the acquisition of new skills and competencies, and in the development of values and attitudes that are relevant to the building of sustainable and peaceful societies. ”

Qingdao Declaration

Article 17.

- “We further recommend that governments and other concerned partners support capacity development in data collection, analysis and reporting at the country, regional and global levels. We request that the UNESCO Institute for Statistics (UIS) and other partners support countries to reinforce and sustain efforts to establish national level mechanisms and processes. We commit to continue to report accurate and complete data in a timely manner to the UIS, facilitating its work and advancing its mission to build and maintain a global repository for ICT in education data. ”

Qingdao Declaration

Article 18.

- “We recommend that the Global Education Monitoring Report, to be hosted and published by UNESCO, uses UIS core indicators on ICT in education to provide regular global-level monitoring of ICT in education.”

Way Forward

- Technical advisory panel (TAP) in December 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 (December 2015)**
- Capacity-building workshops
- Design of new surveys:
  - Usage - efforts underway between UIS, UNESCO regional bureaux, KERIS (Republic of Korea), CETIC.Br (Brazil)
  - Open educational resources (OER)