Pre-Conference Engagement Day
6 FEBRUARY 2024

CONFERENCE ON
EDUCATION DATA
AND STATISTICS

CONFERENCIA SOBRE
DATOS Y ESTADÍSTICAS
DE EDUCACIÓN

CONFÉRENCE SUR LES
DONNÉES ET STATISTIQUES
DE L'ÉDUCATION

7 - 9 FEBRUARY 2024
UNESCO HEADQUARTERS, PARIS, FRANCE
Opening
TUESDAY 6 FEBRUARY, 14:00-15:30

Dr. Gwang-Chol Chang
Chief of Education Policy Section, UNESCO
Agenda
Sound Data for Good Governance through EMIS

- Part 1: Global Trends of National Education Data Ecosystems
- Part 2: Building Sustainable EMIS Transformation Pathways

Each part introduced by a keynote presentation and followed by a panel discussion

Speaker Bios
Keynote presentation: Conceptual Boundaries of Education Management Information Systems

Amélie Gagnon
Senior Programme Specialist, UNESCO-IIEP
A simple yet complex theory of change

Better EMIS → Better data → Better policy implementation

Better Results

More efficiency
More quantity
More equity
More quality
What is an EMIS?

An EMIS is the coordinated network of individuals, organizations, institutions, technologies, processes and procedures, rules, and regulations, that produce the fit-for-purpose quality data needed for informing decision-making processes in operating an educational system.
Meeting whose needs?

The elements included in an EMIS focus on the needs of educational planners and managers, from high-level decision-makers to decentralized level, to perform their responsibilities, regardless of the educational sub-sector, programme orientations, or administrative entity in which they work.
Interoperability of datasets

An EMIS materializes into interoperable datasets, for which there are distinct functionalities (or modules) for data collection, processing, management, storage, archiving, and extraction for analysis (including sometimes simulations and projections models) and dissemination to different types of audiences.
Components and types of data

Typically, an EMIS has components referring to students, schools, human resources (teaching and non-teaching staff), infrastructure and material resources, and financial resources.

The information managed by the EMIS can be quantitative or qualitative, and combine various sources of input.
EMIS Governance

Accountable entities designated under well-defined institutional leadership are responsible to create, maintain, and update the EMIS by guaranteeing both the financial sustainability of the system and the continuous professional development of involved actors.

Good governance also implies leadership in sharing the strategic direction of the EMIS, as well as assessing the relevance and fitness-for-purpose of the data system.
Opportunities for professional and technical improvements

Source: UNESCO-IIEP, adapted from various sources
Bottom line

- Technology is important, but often it is the component that prevents us to see the broader picture.
- Important to ask ourselves why is that the case?
- Crucial to also work on other aspects:
  - Training
  - Technical cooperation
  - Methodologies and standards
Global Trends of National Education Data Ecosystems

Agija Nika  
Senior Expert,  
Ministry of Education and Science,  
Republic of Latvia

Jonathan Challener  
Community Manager  
SIS-CC, OECD

Fabio José Novaes de Senne  
Survey Project Coordinator,  
Brazilian Network Information Center

Xavier DELPORTE  
Director for Public Relations,  
CNIL

Erika Piirmets  
Digital Transformation Adviser,  
e-Estonia Briefing Center
Global Trends of National Education Data Ecosystems

Performance monitoring as part of continuously qualitative and inclusive education

Agija Nika
Senior Expert,
Ministry of Education and Science,
Republic of Latvia
Individual performance monitoring as part of an overall assessment approach
International Student Performance Assessment Programs as the benchmark for excellence
Global Trends of National Education Data Ecosystems

National Educational Data Ecosystem in Brazil

Fabio José Novaes de Senne
Survey Project Coordinator,
Brazilian Network Information Center
## BRAZILIAN NATIONAL DATA ECOSYSTEM

<table>
<thead>
<tr>
<th>Teachers</th>
<th>Enrollments</th>
<th>Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,315,616</td>
<td>47,382,074</td>
<td>178,346</td>
</tr>
</tbody>
</table>

- **86%** of schools record students’ registration data
- **77%** of schools adopt online systems to record students’ enrolment and grades
- **33%** of schools use virtual learning platforms

### Source:
- National Institute for Educational Studies and Research “Anísio Teixeira” (Inep). *Basic Education School Census 2022*.
- Cetic.br
- ICT In Education 2022 survey (Cetic.br)
“CONNECTED EDUCATION”
BROADBAND QUALITY MEASUREMENT SYSTEM

Measurements
Number of measurements stored
~65 Millions

Schools
Number of schools with the measurement agent installed
71,564

Municipalities
Number of municipalities with at least one measurement agent already installed
5,470

https://conectividadenaeducacao.nic.br/
Global Trends of National Education Data Ecosystems

How Estonia put „e“ in education?

Erika Piirmets
Digital Transformation Adviser, e-Estonia Briefing Center
eriaka.piirmets@eas.ee
Preparing for the information society

- 95% of schools use e-diaries
- 99% of Estonian kindergartens take part in technology education programme ProgeTiger
- 4th in media literacy (Media Literacy Index 2022)
- 9% of students study ICT in Estonia – twice as many as EU average (Eurostat 2018)
- 1st in digital learning (CEPS 2019)
- 40% of ICT university students are female – this is highest share in Europe (Informatics Europe 2020)
Global Trends of National Education Data Ecosystems

The Statistical Information System Collaboration Community

Jonathan Challener
Community Manager
SIS-CC, OECD
A reference open-source community for official statistics, focusing on product excellence and delivering concrete solutions to common problems through co-investment and co-innovation.

The bedrock of more than a decade of collaboration!
OPEN KNOWLEDGE & CO-INNOVATION

STAT ACADEMY
Support your experts to become good trainers, coaches

sdmx
Structure your (Meta) data governance

UTC
User research Task Force

OPEN COLLABORATION

SDMX enables a cooperative “Business Model”

Stat Suite
Open-source tools enables to mutually leverage others investments

SDMX enables a cooperative “Business Model”

Coordinated NSS strengthens data accessibility & usability
Global Trends of National Education Data Ecosystems

CNIL's Approach to Data Privacy in French Education: Aligning with GDPR

Xavier DELPORTE
Director for Public Relations, CNIL
Keynote presentation: Building Sustainable EMIS Transformation Pathways

Evan Atis
Education Economist
Data & Evidence Lead, GPE
Context: Why do we need to further modernize EMIS?

- Learning crisis;
- Inefficiencies of education systems;
- Weak evidence-based monitoring mechanisms;
- However, Education systems generate a large amount of data.

1. How can countries shift their efforts from intensive data collection processes to data translation into evidence that can be used for good governance & education systems transformation?

2. How can country partners build a strong data system architecture based on what already exists?
Strengthening EMIS Modernization: The challenges

**Coordination & Governance**
- Uncoordinated efforts to data generation strengthening.
- Weak policy and governance frameworks.

**Institutional Capacity**
- Focus on capacity strengthening at national level and less at subnational level.
- Lack of resources to maintain the required capacity over time.

**Data Supply-Demand Gap**
- Underutilization of available data.
- Data collected mainly for reporting purposes but not to guide improvements.

**Inadequate Data & Digital Solutions Architecture**
- Lack of interoperability standards.
- Weak data governance framework.
- Monolithic vs Integrated systems.
Opportunities for EMIS Modernization: The Foundations

1. Ensure that decision-makers including teachers, have easy access to information and knowledge to help improve teaching and learning as well as system efficiencies.

2. Create a Virtuous Cycle of data production and data usage that drives informed decision making and facilitates the monitoring of SDG 4.
Opportunities...: Shared Understanding of the Interrelationship between Categories of Data to Address key Policy Questions

Shift to more advanced analytics on: 1) Teaching, including SDG 4 monitoring; 2) Early warning system creation; 3) Efficient allocation of resources;
Opportunities: The Virtuous Cycle

1. Using Microservice architecture, applications have the capability to share data using common standards, are interoperable, and handle a single functionality.

2. An interoperable system connects and manages all data centrally, assigning and managing unique identities centrally (Student, Teacher, Asset IDs).

3. Reports are generated with appropriate access levels for different stakeholders.

4. These reports help inform instruction and reallocation of resources effectively.

5. This program results in student and teacher improvement and enables the continuous collection of information for future success.

6. Feedback back to schools.
GPE’s Efforts to Support EMIS Modernization (1/2)

Data & Evidence

Gender-responsive sector planning, policy & monitoring

Sector coordination

Volume, equity & efficiency of domestic public expenditure

Gender is hardwired across all four enabling factors
GPE’s Efforts to Support EMIS Modernization (2/2)

GPE MOBILIZES PARTNERS TO SUPPORT SYSTEM TRANSFORMATION

- Assessment by ITAP and Gcountry endorsement
- Finalization of the partnership compact
- Full alignment of system transformation priorities
- GPE grant application
- Ability to learn from evidence and adapt as needed
- Implementation of priority reform and monitoring of partnership compact
- Additional partner support
- GPE Board review of allocation amount

SUPPORTED BY
- Knowledge & Innovation Exchange (KIX)
- Technical Assistance Initiative
- Education Out Loud
Building Sustainable EMIS Transformation Pathways

**Phillipa Livingston**
Senior Statistician, Ministry of Education and Youth, Jamaica

**Dr. Prosper Behumbiize**
Program director, Global Health Information Systems Programs (HISP)

**Alpha Bah**
Head of the EMIS unit, Ministry of Basic and Secondary Education, Gambia

**Pierre Chapelet**
Senior Programme Officer, UNESCO HQ
Global Trends of National Education Data Ecosystems

The main challenges Jamaica faced in modernizing the EMIS and what strategies were implemented to overcome them?

Phillipa Livingston
Senior Statistician,
Ministry of Education and Youth, Jamaica
Challenges and complexities faced in modernizing EMIS in Jamaica

- **Data Quality and Standardization** - Multiple computer-based applications that are not integrated
- Resistance from Secondary schools who have their own Management Software
- **Policy and Governance**: Functional Structure of the MoE&Y do not allow for quick decision-making. Delays in decision-making in cross-functional areas
- Buy-in into urgency and importance of implementation

- **Capacity Building and Training**
  Availability of the technical skill sets to implement the EMIS into the MoE&Y and schools.

- **Infrastructure and Technology**
  Availability of technological infrastructure in place to run the EMIS

- **Financial Constraints**: lack of adequate funding for the development, implementation, and maintenance of the EMIS was a persistent challenge
How did these challenges reflect broader global trends in EMIS development?

These challenges reflect broader global trends in EMIS development, such as the need for:

- real-time data capture capabilities to facilitate analysis and decision-making processes,
- Quality data serves as a diagnostic tool, enabling the identification of needs, problems, and challenges within the education system
- Data will allow for purposeful and efficient allocation of resources across all levels.
- An efficient system that channel resources into areas of greatest need and aligned with strategic objectives
Strategies implemented to overcome them

- Implementation of change management strategy- contracted a team to develop the strategy.
- Formulate a strategic vision and plan for EMIS development (establish conditions for strong governance) – establish a Steering committee
- Conduct capacity analysis of the existing technology infrastructure
- Identify technological and capital investment requirements (cost implications)
- Partnered with funding agencies eg. IDB
- Identify what modules are needed in the short and long-term
- Develop the capacity of technical staff and end-users – restructuring on the MIS Unit and training of staff
Global Trends of National Education Data Ecosystems

DHIS2 for Education implementation Challenges and Strategies

Dr. Prosper Behumbiize
Program director,
Global Health Information Systems Programs
Key learnings and practices most valuable in adapting DHIS2 for education sector needs

- **Stakeholder engagement** in initial processes of system design and subsequent implementation as it fosters ownership and ensures the system sustainability and alignment to user needs
- Importance of establishing a **master school list** as a backbone facilitating smooth data reporting and management
- **Equipping** national and subnational personnel with the necessary skills and knowledge ensures the efficient operation and maintenance of these systems over the long term
- Relevance of **partner coordination and harmonization** in order to streamline processes, minimize duplication and maximize impact
- Systems thrive in an environment supported by **well defined policies, adequate human resources** (district and learning institutions data personnel) and necessary infrastructure
Challenges faced during the implementation of DHIS2 for education

- Limited stakeholders’ buy-in especially around decentralization and trust of data collected and captured by schools
- **Limited resources** (HR and funds) for data gathering, capture, analysis and dissemination. A lot of data discussions at global, continental, regional with limited impact at subnational level
- Rapid EMIS shift not matching the reality on ground
- **Data use culture** - non reliance on the available data, low motivation of data users
- Lack of data reporting **policies and guideline** especially when it comes to Private schools
- Limited **accountability** - to governments, funders and donors
Strategies that have proven effective in navigating the complexities of EMIS modernization in these contexts?

- Leveraging on the **DHIS2 capacity** (HISP groups, Health personnel and DHIS2 Community of Practice)
- **Real time and Routinization** of reporting to support timely data use
- Self service **visualization and dissemination** tools inbuilt in DHIS2 and addons
- Mature and free **API to exchange and integrate** DHIS2 for Education - legacy data and different softwares used in countries
- DHIS2 for education **Apps/Tools** for data capture/exchange, analysis, visualization and dissemination (e.g. SEMIS, Report Generator, Visual Studio, Import Wizard)
- Regional DHIS2 for Education Webinars, Conferences and Academies and online resources
Global Trends of National Education Data Ecosystems

The role of technology in education data production

Alpha Bah
Head of the EMIS unit,
Ministry of Basic and Secondary Education, Gambia
The Education Data Gap

▶ Millions of children remain uncounted in education data.
  ▪ About 27% or 78,000 OOSch

▶ COVID-19 pandemic further disrupted data collection.
  ▪ Emis data was redundant

▶ Traditional methods have limitations, requiring innovative solutions.
  ▪ ASC, Aggregate and Quantitative data in a centralised approaches

▶ Technology offers promising tools for improved data production
  ▪ Use of SMS/Whatsapp annd AI

SDG 4 and the Need for Open Dialogue

▶ SDG 4 transformed education monitoring since its inception in 2015.
  ▪ Health, Finance and Social and Gender Sectors

▶ Technical Cooperation Group (TCG) established for SDG 4 indicators.

▶ National SDG 4 benchmarks encourage data assessment and target setting.

▶ Regular forum needed for international data discussions
Global Trends of National Education Data Ecosystems

EMIS Readiness Assessment Tool for Transformation & Sound Data for Good Governance Initiative (SDG²)

Pierre Chapelet
Senior Programme Officer,
UNESCO HQ

UNESCO Institute for Statistics
All National Data Systems in Education have Strengths and Weaknesses. UNESCO’s **EMIS Readiness Assessment Tool for Transformation** provides a diagnosis to determine priority areas to transform national Education Management Information Systems.

**4 dimensions**  
12 sub-dimensions  
4 weeks

Unlocking the power of data and EMIS for enhanced education management.

Lightweight and generic EMIS diagnostic tool  
Country-specific transformation pathways  
Initiating regional dialogue & exchange between countries  
Global benchmarking and observatory

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2024 Conference on Education Data and Statistics  
UNESCO Institute for Statistics
UNESCO’s SDG² Initiative brings together open source EMIS solution providers and services to transform Education Management Information Systems.

A Global Catalogue of open-source core EMIS solutions to enable countries to objectively select tools adapted to their needs and use-cases.

A Global Service Desk for countries to get assistance on use of EMIS solutions.

A Global Academy to access a large collection training resources and courses on EMIS related domains

A Market Place to identify EMIS service providers providing technical support services

A Global Community of Practice for knowledge and experience sharing.

Standards for quality delivery

- **Software standards**: open-source, generic, documented
- **Data standards**: compliance with internationally recognized data frameworks and standards for ease of integration
- **Implementation standards**: service delivery modalities fostering local and regional capacities
Closing Remarks

Dr. Gwang-Chol Chang
Chief of Education Policy Section,
UNESCO

JOIN US

Join our Global Community of Practice on Education Management Information Systems:
educationpolicy@unesco.org
THANK YOU VERY MUCH!

For more information
Please contact to:
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