



The Global Partnership for Education Knowledge and Innovation Exchange

POLICY AND PRACTICE INSIGHTS DATA SYSTEMS AND DATA USE





A synthesis of five GPE KIX projects in 44 countries offers practitioners and decision-makers effective strategies and practices for leveraging data systems to enhance education quality, equity and decision-making.

Photo: GPE/ Sebastian Rich

Education management information systems (EMIS) collect, process, maintain and disseminate data and information to support education leaders, decision-makers and managers at all levels in their decision-making, policy analysis and formulation, planning, monitoring and management responsibilities.

However, many countries in the Global South still face significant challenges in harnessing the full potential of such systems – for example, fragmented datasets; limited access to data systems; limited capacity to analyze, interpret and evaluate the relevance and quality of data, including data relating to learning outcomes; different perceptions of the reliability of data; and concerns about the prospect of exposing institutional underperformance. In addition, gender equality variables and the needs of marginalized groups, including children who have disabilities, displaced communities and persons who come from low socio-economic backgrounds, generally do not receive sufficient attention within data systems. Consequently, public policies to redress inequities and inequalities and improve quality within education systems often do not reflect the specifics and scale of prevailing local quality, equity and social inclusion issues.

THE RESEARCH

From 2020 to 2024, the Global Partnership for Education Knowledge and Innovation Exchange (GPE KIX), a joint endeavour with Canada’s International Development Research Centre (IDRC), supported five research projects to test, adapt and support strategies to scale data systems and data use in education to improve learning outcomes, equity and evidence-based decision-making.

THE FIVE DATA SYSTEMS AND DATA USE PROJECTS WERE:

Data Must Speak About Positive Deviance Approaches to Learning (Data Must Speak)

Using Data for Improving Education Equity and Inclusion (MICS-EAGLE)

Common-Scale Assessment of Early and Foundational Math Learning Across the Global South (Common-Scale Assessment)

Adapting Assessment into Policy and Learning: Adolescent 21st Century Skills (ADAPT)

Data Use Innovations for Education Management Information Systems in The Gambia, Uganda and Togo (Data Use Innovations for EMIS)



KEY DATA SYSTEMS AND DATA USE INNOVATIONS ASSESSED

Each project assessed select data innovations to expand and strengthen knowledge of their characteristics and address knowledge gaps about how to scale them. The innovations that were assessed were:

- An innovative [positive deviance \(PD\) approach](#) in the Data Must Speak project to help ministries of Education and researchers work together to integrate and analyze existing administrative datasets to identify schools that outperform other schools that are operating in similar contexts and with similar resources. They then analyzed both practices and behaviours that led to the better performance of those positive deviant schools and how they could be scaled to advance learning outcomes.
- A new data analysis approach applicable to household surveys that promotes evidence-based policy decisions, including products such as a standard data/statistical package and monitoring frameworks for policy follow-up actions. This approach was developed by the MICS-EAGLE project and used the [Multiple Indicator Cluster Survey \(MICS\) 6 household surveys](#). Those surveys integrate direct learning assessments and monitor learning outcomes of school-age children both in and out of school.
- The [PAL Early Language & Literacy and Numeracy Assessment \(ELANA\)](#), developed through the Common-Scale Assessment project, evaluates key early learning competencies described in [UNESCO's Global Proficiency Framework](#). ELANA is an expansion of the PAL Network's International Common Assessment of Numeracy (ICAN) tool: it includes both numeracy skills and a new language and literacy component, and it assesses a range of literacy-related factors, from oral language to reading comprehension skills. It provides data on the learning continuum from pre-primary skills to foundational literacy and numeracy (FLN).
- A knowledge management system developed by the ADAPT project to embed the Assessment of Life Skills and Values in East Africa (ALiVE) measures of 21st-century skills within national efforts to develop/improve education and training programs and practices. The [ALiVE Household-based Assessment Tool](#) is a simple, rigorous and easy-to-use affordable tool that can be used on a national scale in both formal and non-formal education settings for adolescents aged 13–17 to assess their proficiencies in four areas of functioning: the life skills of self-awareness, problem-solving and collaboration, and the value of respect.
- The innovative and fully customizable platform [DHIS 2 for Education](#), which supports data capture, visualization, management, analysis and use, through a pre-configured Education Toolkit that includes ready-to-use, customizable annual school census forms that can be adapted in accordance with country-specific needs. The District Health Information System (DHIS2) was created by the University of Oslo's Health Information Systems Programme (HISP) for use in the health sector and was adapted for the education sector in response to the lack of turnkey EMIS.



THE IMPACT OF DATA SYSTEMS AND DATA USE INNOVATIONS

In testing and assessing a range of data innovations, the five GPE KIX projects supported positive outcomes that benefited national education systems and led to an effective use of data in the education policy and planning processes.



INCREASED DATASET INTEGRATION AND DATA USE FOR EVIDENCE-BASED DECISION-MAKING

- The Data Must Speak research shows an innovative use of data: integrating and analyzing existing data to identify both outlier schools and characteristics of effective schools. The project's ability to quantify the impact of various educational factors led to systemic changes and influenced policy discussions. For example, in Nepal, the research findings about PD informed reviews of the national education plan and budget during joint sector review meetings.
- The MICS-EAGLE advocates for household survey data integration into EMIS data processes, and the MICS-EAGLE project significantly influenced educational policies: Togo removed tuition fees for certain learners, Kiribati adapted remote learning strategies based on data drawn from the project and Malawi integrated data from the project into national systems and used it for district profiling.
- The Common-Scale Assessment and ADAPT projects were both based on findings from citizen-led assessments (CLAs), which mobilize civic pressure to urge governments to take action – in this case, to prioritize not only schooling but also quality learning. The Common-Scale Assessment project provides potential breakthroughs in FLN measurement and in more reliable and comparable education assessments across countries. The ADAPT project also made some inroads in terms of the international discourse about using data from learner assessments – particularly life skills assessments – through household surveys to improve the design, delivery and assessment of curricula, aligning them with 21st-century skills. In Tanzania, ADAPT influenced vocational pathways and life skills education through partnerships with key educational institutions. The Zanzibar Ministry of Education has been notably proactive, using the ADAPT insights to enhance policy dialogue and develop educational guidelines.
- Data Use Innovations for EMIS showcased diverse applications of the DHIS2 system, transforming the education sector through digitization and data-driven decision-making. The Gambia now has a comprehensive, sector-wide EMIS solution that tracks approximately 350,000 learners and teachers. In Togo, the initiative enhanced the existing UNESCO-developed EMIS system StatEduc2 by integrating DHIS2 to create a comprehensive data hub. Uganda focused on cross-sectoral collaboration and decentralization and transformed a school-based health surveillance system into a district-level DHIS2 platform for integrated public service delivery. The new system supports real-time data analysis, which has improved service responsiveness and local empowerment.



ENHANCED CAPACITIES TO ANALYZE, INTERPRET AND USE DATA FOR DECISION-MAKING

- The Data Must Speak initiative helped ministries of Education move through a five-stage model, with a focus on using data to improve education and support a learning-by-doing approach. Field visits to outstanding schools facilitated the identification of key practices that contributed to their success; this in turn led to an investigation of scalable strategies.
- MICS-EAGLE was notable for developing and disseminating fact sheets and ensuring local ownership through joint creation and validation processes. In addition, IIEP-UNESCO in Dakar, Senegal, collaborated with the project team on the development of an online course for educational officials across Africa, aimed at improving data usage for policymaking.
- The Data Use Innovations for EMIS project supported the creation of an EMIS master's program at the University of The Gambia and encouraged sustained training for ministry officials through collaborations with the University of Oslo and free online certificated courses on using the database.



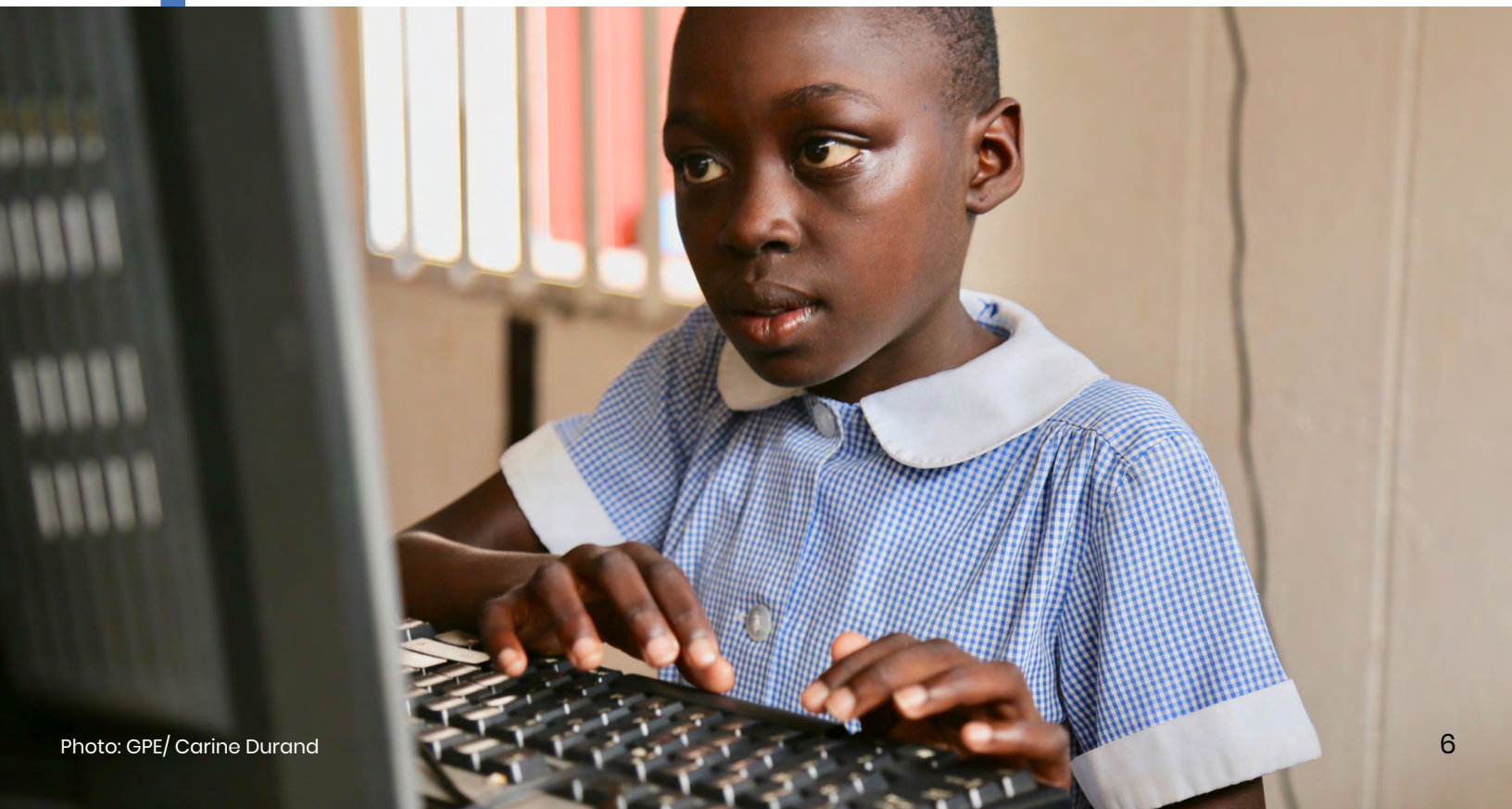
ENHANCED DATA ABOUT MARGINALIZED GROUPS AND GENDER EQUALITY, EQUITY AND INCLUSION

- Data Must Speak produced significant insights into the impact of female leadership in schools .
- MICS-EAGLE highlighted how household survey data can help identify barriers to accessing school and improve understanding of the intersectionality of gender and social inclusion. Unlike earlier EMIS, it provides detailed granular data on households that can be used to improve understanding of the dynamics of exclusion from education. Comprehensive data from various domains such as gender, disability, education, early marriage and child labour from past MICS was integrated by the MICS-EAGLE project and could be compared across 31 GPE partner countries in different regions to highlight performance differences in critical educational areas such as access to education, skill development, inclusiveness and quality of early education.
- The People's Action for Learning (PAL) Early Learning & Literacy and Numeracy Assessment (ELANA) innovation, developed through the Common-Scale Assessment project, is one of the first assessment tools to use uniform disability measures across multiple countries to generate data to assess literacy and numeracy skills among learners with special needs.



INCREASE ACCESS TO CUSTOMIZABLE AND SCALABLE DATA SYSTEMS TO MEET NATIONAL NEEDS

- MICS put forward by the MICS-EAGLE project were tailored by national entities, usually national statistical offices, to make them relevant to individual country data needs. UNICEF created a standard questionnaire that countries can customize as required. MICS-EAGLE involves balancing global comparability with the need for localized solutions, which suggests a hybrid approach might be the most effective option.
- In the Common-Scale Assessment project, the successful development of a standardized customized assessment tool through the collaborative efforts of stakeholders across multiple countries was a key accomplishment and provided valuable lessons on how to create complex, multi-language standardized assessments.
- The Data Use Innovations for EMIS project demonstrated the potential of adaptable modular, open-source data systems. The DHIS2 model takes a modular approach to system scaling, which allows countries to upscale as they develop their capacity, and shares its source code in a public GitHub space so that developers can customize it as required. The technical architecture of the model, a turnkey model, is open-source, which makes it affordable and exceptionally adaptable – it can address the key challenges arising from partner countries' specific needs to establish a comprehensive yet flexible data system that reflects their context and priorities.



RECOMMENDATIONS FOR EFFECTIVE DATA SYSTEMS AND DATA USE

Effective data systems and data use are vital for the successful transformation of education governance and management for improved education quality, gender equality, equity and inclusion. If change is to be sustainable and transformational, interventions involving data systems must include dataset integration within and across sectors, capacity-strengthening in effective evidenced-based policymaking and the scaling of innovations that enhance data reporting on all children, including marginalized learners. The following recommendations, grouped by theme, emerged from across the five research projects and can be used by project teams embarking on similar initiatives:

1 Dataset integration and data use of multi-source data to inform policy and planning

- **Design data systems that allow for easy integration of data from both within and outside of the education system:** Confirm that data systems allow the integration of administrative data with, for example, teacher records, payroll, finance and learning assessments.
- **Adopt school typologies for targeted interventions:** Encourage ministries to develop and use school typologies, based on research findings from GPE KIX projects, to help identify factors that contribute to school effectiveness, allowing for targeted interventions to improve educational outcomes.
- **Standardize assessments across countries:** Promote the adoption of standardized assessment tools developed using CLA approaches among ministries to enhance the reliability and comparability of educational assessments across countries, particularly for learners with special needs.
- **Develop comprehensive guidelines:** Provide ministries with clear guidelines and methodologies for using data in policymaking.
- **Embed data use in national planning:** Integrate the use of assessment data into national education planning processes to ensure it informs decisions about curriculum design, resource allocation and teacher professional development.

2 Capacity-strengthening to analyze, interpret and use data for decision-making

- **Invest in capacity-strengthening:** Provide targeted training programs for ministry staff to enhance their ability to analyze, interpret and use data. This includes developing the statistical and data literacy skills essential for informed decision-making at all levels of the education system.
- **Institutionalize data literacy:** Establish data literacy as a core competency within ministries of Education by integrating it into ongoing professional development programs.

- **Engage government stakeholders in co-creating data tools, methodologies and systems:** Involve government stakeholders to ensure that all aspects of an initiative are tailored to meet their specific needs. This will increase any intervention's effectiveness and scalability.
- **Foster capacity-strengthening and collaboration opportunities** between sectors such as education, health and social welfare to provide more comprehensive, multidimensional insights into students' needs.
- **Develop strategies to address political and organizational challenges and strengthen coordination:** Collaborate with ministries to sustain data-driven initiatives, as increased transparency on performance data can lead to stakeholder resistance.

3 Use of data to improve gender equality, equity and inclusion

- **Enhance data collection:** Expand data collection efforts to include more granular information about marginalized groups and ensure that equity and inclusion are prioritized in education policies by using a data system that keeps individual records about students as well as records of school counts.
- **Integrate education data with data from other sectors:** Use data from other sectors – for example, the health sector – and promote cross-sectoral data and analysis collaboration to improve understanding of the myriad factors affecting education access, quality and outcomes and enhance the impact of data-driven decision-making.
- **Leverage household survey data:** Use data from household surveys to inform educational strategies at the household level, particularly for out-of-school children. This will facilitate more effective targeting of interventions to address the needs of these children and improve educational equity.

4 Sustainability and scaling of data systems and data use

- **Engage ministries early and ensure ownership:** Increase the likelihood of data-related innovations being adopted and scaled by engaging ministries of Education from the outset. Ministries must see the value of these systems not only as technological tools but also as integral aspects of their policymaking processes. If innovative learning assessment tools are to be adopted and scaled effectively, they must be demystified and aligned with the government's operational systems and educational ethos.
- **Encourage the customization of data tools:** Ensure data tools are fit for local contexts. Involve local stakeholders to build ownership and ensure the successful implementation of the tools.
- **Ensure long-term sustainability:** Design data systems with long-term sustainability in mind, including strategies for maintaining and updating systems without relying on external vendors or funding.

- **Avoid investing in off-the-shelf data systems:** Adopt customizable, scalable, open-source, modular platforms such as DHIS2 for Education to avoid the challenges associated with expensive, vendor-dependent data systems. Systems such as DHIS2 for Education enable governments to collect and use data in real time, making them more responsive to emerging challenges.
- **Develop a strategic scaling framework:** Create a framework that supports the scaling of data systems, focusing on sustainability, local capacity-strengthening and adaptability to different country contexts. A modular data-system design allows countries with fewer resources to run systems in parallel – both school counts and individual records – in only a few schools at first. Governments can expand their use of their systems at their own pace in accordance with the available resources and capacities.
- **Develop a comprehensive EMIS policy** that addresses new data accountabilities and systemic changes and actively involves all stakeholders, including teacher unions: Involve stakeholders to gain support for new data systems, facilitate their successful implementation and minimize stakeholder resistance.
- **Be patient and flexible:** Recognize that sustaining progress in education data systems requires patience, flexibility and quick wins. Stakeholders who are promoting innovation in data systems often face resistance or political or institutional barriers, but fostering shared ownership, trust and understanding of the broader ecosystem can help overcome these challenges. Support ministries through change-management strategies and focus on achieving short-term successes to maintain momentum for long-term policy evolution.

These policy insights are drawn from [Data Systems and Data Use: A Research Synthesis](#).

The Global Partnership for Education (GPE) Knowledge and Innovation Exchange (KIX) is a joint endeavour between GPE and the International Development Research Centre (IDRC) that aims to ensure partner countries have and use the evidence and innovation they need to accelerate access, learning outcomes and gender equality through equitable, inclusive and resilient education systems fit for the 21st century.

Five synthesis reports were commissioned by GPE KIX to consolidate evidence across research projects conducted between 2020 and 2024. Topics include: data systems and data use; early learning; gender equality, equity and inclusion; teacher professional development; and out-of-school children and youth.