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Strengthening and Enhancing
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Enhancing Coherence and Use of Education Data: Addressing System Fragmentation Across Uganda, Senegal, and Burkina Faso

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Executive Summary

Overview of the Issue

Across Uganda, Senegal, and Burkina Faso, education data systems face persistent fragmentation, limited interoperability, and underutilization of data for planning and decision-making. The KIX-SEEDS project, funded by the Global Partnership for Education (GPE) through the Knowledge and Innovation Exchange (KIX) and coordinated by the African Population and Health Research Center (APHRC), seeks to address these challenges. Implemented by HISP Uganda, ESEA Senegal, and ISSP Burkina Faso, the project aims to strengthen education data systems by improving data collection, quality, and use at the subnational level, promoting inclusive and evidence-based decision-making.

Despite increased data collection in the education sector, schools, and districts in the three countries continue to struggle with disconnected data systems, duplication of reporting efforts, and low data utilization. Fragmented digital tools, inconsistent data standards, and insufficient capacity at the local level result in inefficiencies that weaken education planning and accountability. This hinders equitable service delivery and limits the ability to identify and address disparities in access and learning outcomes.

Key Policy Options

- **Harmonize Data Standards:** Adopt unified data architectures linking school-level, district, and national systems to ensure consistency and interoperability.
- **Invest in Sustainable Digital Infrastructure:** Expand ICT access, including offline data tools and reliable internet connectivity, particularly in rural areas.
- **Strengthen Data Literacy and Capacity:** Provide continuous, context-specific training for headteachers, EMIS officers, and planners to enhance data use for decision-making.
- **Streamline Reporting Mechanisms:** Coordinate data demands across ministries and partners to reduce duplication and improve data accuracy and timeliness.
- **Institutionalize Data Use Culture:** Embed “data champions” in schools, create district-level feedback forums, and promote community engagement using data insights.
- **Foster Local Ownership and Sustainability:** Integrate project innovations into national education policies and ensure funding for maintenance, training, and scale-up.

Recommended Course of Action

Education policymakers should prioritize data system harmonization, capacity building, and infrastructure investment to enable continuous, evidence-based planning and monitoring. Governments and partners should adopt open-source interoperable platforms (such as DHIS2 for Education), embed data use mandates within policy frameworks, and foster multi-stakeholder collaboration for sustainability. Building a culture where data informs everyday decisions at the school and district levels will ensure more responsive, inclusive, and accountable education systems.



Key Messages

Turning Data into Action for Better Education Outcomes

- Harmonized and interoperable data systems reduce inefficiency and strengthen education planning.
- Investing in data literacy and digital infrastructure empowers schools and districts to make evidence-based decisions.
- Institutionalizing data use within national policies is critical for sustainability and inclusiveness.
- The KIX-SEEDS project demonstrates that local innovations; when scaled and supported, can transform education governance across Africa.

Introduction

Across many education systems in sub-Saharan Africa, the potential of data to inform planning and improve learning outcomes remains largely untapped. Schools and districts often collect vast amounts of information but struggle to use it effectively due to fragmented data systems, inconsistent reporting standards, limited technical capacity, and weak infrastructure. As a result, decision-making processes at the local level are frequently based on incomplete or outdated information, undermining efforts to deliver equitable and quality education for all learners.

Recognizing these persistent gaps, the KIX-SEEDS (Strengthening and Enhancing Education Data Systems) initiative presents an opportunity to address systemic inefficiencies and build a stronger culture of data use in education. Implemented in Uganda, Senegal, and Burkina Faso, the project focuses on improving how education data is collected, integrated, and used to support inclusive, evidence-based decision-making at the subnational level.

Detailed Manifestation of the Issue in Each Country

A comparative analysis offers policymakers a broader understanding of how similar systemic barriers manifest differently across contexts, and highlights practical, scalable solutions that can inform national reforms and cross-country learning.

Country	Key Data System Challenges	Current Responses / Innovations	Emerging Lessons for Policymakers
Uganda	<ul style="list-style-type: none"> • Overlapping and uncoordinated data requests from multiple administrative layers. • Limited use of data by headteachers due to administrative overload. • Poor internet connectivity and absence of dedicated data personnel. 	<ul style="list-style-type: none"> • Introduction of School Report Card (SRC) integrated with DHIS2 for Education. • Offline Android data capture enabling reporting without internet. • Appointment of data focal persons in schools. 	<ul style="list-style-type: none"> • Offline and school-level innovations can strengthen grassroots engagement. • Sustainability depends on institutional adoption and system-wide integration.
Burkina Faso	<ul style="list-style-type: none"> • Manual, paper-based data collection and isolated digital files. • Lack of real-time dashboards and standardized protocols. • Low data literacy among local stakeholders. 	<ul style="list-style-type: none"> • Creation of local monitoring committees for participatory governance. • User feedback forums to strengthen dialogue between data producers and users. • Introduction of school dashboards and mobile tools. 	<ul style="list-style-type: none"> • Participatory approaches enhance accountability and data ownership. • Requires further institutionalization and capacity support.
Senegal	<ul style="list-style-type: none"> • Multiple digital platforms (KoboToolbox, Excel, Laravel-Streamlit) operating in silos. • Uneven access to tools and training at school level. • Limited data use beyond pilot areas. 	<ul style="list-style-type: none"> • Capacity-building and equipment provision for municipalities. • Development of an integrated visualization platform with scale-up potential. • Municipal-level engagement and local ownership. 	<ul style="list-style-type: none"> • Strong local commitment can drive sustainability. • Policy integration and financing are key to scaling and maintaining gains.

Root Causes

1. Lack of Harmonized Data Standards Across Sectors and Levels

A fundamental barrier across the three countries is the absence of unified data standards that govern what data is collected, how it is formatted, and how it is shared across different levels of the education system. Ministries, local governments, and schools often rely on varied data collection templates and reporting tools, leading to inconsistency in definitions and duplication of effort.

For instance, a school might be required to report similar indicators to different departments using separate systems. This lack of standardization hinders data interoperability, making it difficult to aggregate or compare data across districts or over time. Similar findings have been reported in Uganda, where multiple unaligned data systems continue to fragment education information management (Education DHIS2, 2023); in Burkina Faso, where a review of the Education Management Information System (EMIS) urged the establishment of a unified, cross-ministerial framework (ADEA, 2019); and in Senegal, where the SIMEN platform, though comprehensive, reaches only about 20 percent of schools due to weak system integration and connectivity (Education Profiles, 2024).

2. Insufficient Investment in Digital Infrastructure and Connectivity

Many schools, particularly in rural and under-resourced areas, operate without reliable internet connections or adequate ICT equipment. This severely limits their capacity to participate in digital data collection and reporting processes. In Uganda, unstable internet connectivity continues to hinder the use of digital dashboards such as the School Report Card (APHRC, 2023). In Senegal, over one-third of public schools lack electricity and only a quarter have internet access (ICTworks, 2023). In Burkina Faso, the government has only recently begun scaling digital access through the World Bank's Digital Acceleration Project (World Bank, 2024). The digital divide therefore remains a central challenge, not only in terms of infrastructure but also affordability and consistent connectivity.

3. Limited Training and Time for Local Actors to Effectively Use Data

Even where digital tools exist, education stakeholders—especially headteachers, EMIS officers, and district planners—often lack the time or skills to use them effectively. Administrative demands leave little opportunity to analyze or interpret data for school improvement. In Uganda, evidence from the DHIS2-DEMIS pilot shows that capacity building for district staff remains limited and sporadic, restricting data use at lower levels (GPE KIX, 2022). Similar issues of low data literacy and insufficient training are reported among local education officials in Burkina Faso and Senegal (ADEA, 2019; Education Profiles, 2024). Without structured and continuous professional development, data systems risk remaining underutilized.

4. Duplication of Effort Due to Multiple Parallel Reporting Systems

Parallel reporting channels from different government departments and development partners create redundancies, confusion, and “data fatigue.” Schools are often required to submit the same information in different formats, overburdening staff, and lowering data quality. In Uganda, DHIS2 documentation highlights that ad hoc data calls remain common, despite efforts to integrate education data within a single platform (Community DHIS2, 2023). Comparable challenges have been noted in Burkina Faso, where overlapping responsibilities between ministries lead to duplicated EMIS structures (ADEA, 2019).

5. Weak Incentives or Mandates for Using Data in School or District Decision-Making

Finally, the use of data for decision-making is often undermined by weak institutional incentives. In many contexts, data submission is treated as a compliance exercise rather than a tool for improving performance. In Uganda, the absence of a formal EMIS policy has contributed to limited accountability and weak data culture among schools (The Observer, 2025). Similar patterns are evident in Burkina Faso and Senegal, where decision-making remains highly centralized and where local officials lack clear mandates or resources to incorporate data into planning processes (ADEA, 2019; Education Profiles, 2024). This results in a self-reinforcing cycle: low data use discourages investment in better systems, which in turn perpetuates underuse.

Consequences of inefficient data systems

1. Reduced efficiency in education service delivery

When data systems are fragmented, duplicative, or inaccessible, the ability of education officials to plan effectively is severely compromised. Resource allocation becomes less responsive to actual needs on the ground. For example, identifying teacher shortages, tracking student performance trends, or managing school grants becomes cumbersome and delayed. Inefficiencies result in wasted resources and slow policy response times, particularly at subnational levels where rapid decision-making is crucial.

2. Missed opportunities for identifying and addressing inequities

One of the key goals of the KIX-SEEDS project is to highlight and reduce disparities in educational access and quality using disaggregated data (e.g., by gender, disability, location). However, when data is not collected systematically or used effectively, inequities remain hidden. Vulnerable populations such as girls, children with disabilities, and students in remote areas may not be adequately accounted for in policy decisions or interventions. The inability to act on inequities perpetuates cycles of exclusion and undermines the inclusive education agenda.

3. Policy decisions that are not grounded in timely or complete evidence

Without timely, accurate, and comprehensive data, decision-makers are forced to rely on outdated reports, assumptions, or anecdotal evidence. This undermines the effectiveness of education planning, budgeting, and reform. For instance, a ministry may prioritize infrastructure investment without recognizing emerging needs for teacher deployment or inclusive education services in specific regions simply because the data to guide these decisions is incomplete or poorly analyzed.

4. Heavy workload among local actors tasked with data reporting

Teachers, headteachers, and local government officers often express frustration at the burdensome and repetitive nature of current data practices. When they see little returns such as feedback, actionable insights, or support on the time they invest in data collection and reporting, their motivation to comply diminishes. This can lead to lower data quality, resistance to new data initiatives, or disengagement altogether. Ultimately, the credibility and utility of the education data system suffer.

Lessons and opportunities for strengthening education data use

Experiences from Uganda, Senegal, and Burkina Faso demonstrate that strengthening education data systems requires more than just technology—it depends on building local capacity, institutionalizing feedback loops, and fostering a culture of evidence use. Several lessons and opportunities emerge from the regional experiences of data system enhancement.

1. Integration and interoperability create systemic efficiency

Efforts to link school-level data with national platforms show the value of harmonized data systems. In Uganda, integrating school report cards within national education data platforms has demonstrated how interoperability can improve access to real-time data for planning and performance monitoring. The key opportunity lies in scaling such integration nationally to minimize duplication and promote consistent data standards across education sectors.

2. Localized digital solutions strengthen ownership

Mobile and web-based applications—such as those piloted in Burkina Faso—illustrate how user-centered design can make data collection and visualization more relevant to teachers and school administrators. Locally adaptable tools that function both online and offline ensure that even resource-constrained schools can participate in evidence generation. Expanding these low-cost, scalable solutions could enhance participation and accountability at the school level.

3. Building capacity and incentives enhances data use

Training headteachers, municipal officers, and district planners to interpret and act on education data highlights the importance of continuous capacity building. Initiatives that embed mentorship and peer learning encourage sustained engagement beyond initial training sessions. Institutionalizing roles for “data champions” or creating incentives for data-informed decision-making presents an opportunity to deepen this culture of use.

4. Data for inclusion and equity strengthens accountability

Gender-responsive and inclusive data practices—such as tracking absenteeism and sanitation indicators to support girls’ participation—reveal how local data can directly inform targeted interventions. Across all three countries, using disaggregated data to identify disparities provides a powerful tool for accountability and equitable resource allocation.

5. Cross-country collaboration fuels shared learning

Comparative experience shows that regional collaboration accelerates innovation. Lessons from different national contexts; Uganda’s system integration, Senegal’s municipal-level ownership, and Burkina Faso’s participatory digital tools offer complementary pathways toward stronger education data ecosystems. The opportunity lies in sustaining these learning exchanges to inform broader policy and reform at the continental level.

Recommendations for Education Policy Makers

1. Harmonize data systems (Lead actors: Ministry of Education (MoE), Ministry of ICT, National Statistics Offices, and EMIS Units)

- Establish and adopt a unified national data architecture that links school-level data with district and national Education Management Information Systems (EMIS) to ensure interoperability and reduce duplication.
- Promote open-source platforms (e.g., DHIS2 for Education) that allow cross-sector data integration between education, health, and local government systems.
- Develop national data standards and protocols for data collection, validation, and sharing across administrative levels.

2. Build a culture of data use (MoE, District Education Offices (DEOs), Teacher Training Institutions, and Development Partners)

- Invest in ongoing capacity-building and mentorship for headteachers, EMIS officers, and district planners to strengthen data literacy and analytical skills.
- Institutionalize “data champions” in schools and districts to promote grassroots-level data ownership and routine use in school improvement planning.
- Incorporate data use modules into pre-service and in-service teacher training programs.

3. Ensure sustainable infrastructure (Ministry of ICT, Ministry of Finance, MoE, and Local Governments)

- Prioritize budget allocations for ICT infrastructure; particularly in rural and underserved areas, to improve access to devices, power supply, and stable internet connectivity.
- Adopt and scale offline data collection tools that enable reporting in low-connectivity environments, ensuring synchronization when internet becomes available.
- Explore public-private partnerships (PPPs) to expand broadband coverage and reduce internet costs for schools.

4. Streamline reporting workflows (MoE Planning Departments, District Education Offices, and Development Partners)

- Develop and enforce policy guidelines that define clear reporting cycles and indicators to reduce ad hoc data calls and redundant reporting.
- Integrate partner-supported data initiatives within the national EMIS framework to ensure alignment with government priorities.
- Encourage periodic data reviews at district and national levels to promote accountability and continuous learning.

5. Promote stakeholder engagement and transparency (Local Governments, School Management Committees (SMCs), and Civil Society Organizations (CSOs))

- Facilitate school- and district-level forums for discussing education performance, dropout trends, and inclusion indicators to promote transparency and community participation.
- Leverage local innovations such as WhatsApp groups (Uganda) and town hall data workshops (Senegal) to sustain communication between schools, parents, and education officials.
- Encourage citizen feedback mechanisms to improve responsiveness and strengthen trust in education data systems.

Conclusion

Without immediate and coordinated reform, education systems risk perpetuating inefficiencies, inequities, and data silos that undermine planning and service delivery. The experiences emerging from the KIX-SEEDS initiative demonstrate that transformative change is possible when data systems are harmonized, actors are empowered, and evidence informs decisions.

Now is the time for Ministries of Education, ICT, and Local Governments; working with regional and development partners to translate these lessons into policy and institutional action. Strengthening subnational education data ecosystems is not only a technical necessity but a foundational step toward more inclusive, accountable, and resilient education systems across Africa.



References:

- African Population and Health Research Center (APHRC). (2023, July 6). Revolutionizing education through data intelligence. <https://aphrc.org/blogarticle/revolutionizing-education-through-data-intelligence>
- Association for the Development of Education in Africa (ADEA). (2019). Peer review of Burkina Faso's Education Management Information System (EMIS). <https://knowledgehub.adeanet.org/en/elibrary/adea2019d007>
- Community DHIS2. (2023). Routine data collection in Uganda: Enhancing dissemination and use of education data at district and school levels. <https://community.dhis2.org/t/the-role-of-routine-data-collection-in-enhancing-dissemination-and-use-of-education-data-at-district-school-levels-dhis2-demis-uganda/52323>
- Education DHIS2. (2023). Routine data collection: Uganda case study. <https://education.dhis2.org/routine-data-collection-uganda>
- Education Profiles. (2024). Senegal: Climate change communication and education profile. <https://education-profiles.org/sub-saharan-africa/senegal/~climate-change-communication-and-education>
- Global Partnership for Education Knowledge and Innovation Exchange (GPE KIX). (2022). Enhancing data use in districts and schools in Uganda through DHIS2-DEMIS. <https://www.gpekix.org/blog/enhancing-data-use-districts-and-schools-uganda-dhis2-demis>
- ICTworks. (2023). Digital resilience in Senegal's education system. <https://www.ictworks.org/digital-resilience-senegal-education>
- The Observer. (2025, March 26). Two years later, private schools lag in information system compliance. <https://observer.ug/education/two-years-later-private-schools-lag-in-information-system-compliance/>
- World Bank. (2024, January 23). Burkina Faso: Scaled-up support for digital transformation. <https://www.worldbank.org/en/news/press-release/2024/01/23/afw-burkina-faso-scaled-up-support-for-digital-transformation>

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