AFRICAN UNION
الاتحاد الأفريقي

UNION AFRICAINE

UNIÃO AFRICANA

Addis Ababa, ETHIOPIA P. O. Box 3243 Telephone: 00 251 11 551 7700 Fax: 00 251 11 551 7844
Website: www.au.int

DEPARTMENT OF HUMAN RESOURCES, SCIENCE AND TECHNOLOGY

Pan-African Institute of Education for Development (IPED)

AU- IPED FIELD DATA MANAGEMENT EXERCISE REPORT

1. **Background**

I. History

Pan-African Institute of Education for Development (IPED) is a specialized institution of the African Union that functions as the observatory of Education in Africa. Originally known as the African Bureau of Education Sciences (BASE) under Organization of African Unity, IPED's role is to ensure quality, responsive and inclusive education development in Africa based on sound, accurate, and timely information in order to meet the individual and collective goals for the development of human resources and intellectual capacity in the continent. It is headquartered in Kinshasa, Democratic Republic of the Congo (DRC) and works closely with entities like International Centre for Girls' and Women's Education in Africa (CIEFFA) based in Ouagadougou, Burkina Faso and Association for the Development of Education in Africa (ADEA).

II. IPED Mandate

All development frameworks, international and continental recognize education as essential to development in Africa. In line with this, education in Africa has been prioritized for intense investment to produce quality human capital to support the objectives of the various development frameworks, such as Sustainable Development Goals (SDGs) and Agenda 2063, as well as education-specific frameworks like Continental Education Strategy for Africa (CESA2016-2025) and Edu2030.

As the African Union observatory for education in the continent, IPED is mandated to establish a continental Education Management Information System in line with its role of ensuring quality, responsive and inclusive education. The system will contain both granular and composite education data obtained from the national EMIS systems of member states. The immediate focus of IPED therefore is to help strengthen the national EMIS systems of member states so that they can feed into the continental EMIS for adequate and informed policy-making, planning, and resource allocation.

IPED is also responsible for monitoring the implementation of the Plan of Action and reporting on continental and regional performance on all priority goals by outputting analytical reports based on statistical indicators.

III. Justification

Timely data is essential for EMIS systems to ensure the efficiency in policy formulation by governmental bodies. The existent data blanks in the progress reports submitted by member states towards the implementation of the Action Plans for CESA calls for a strengthened continental EMIS. CESA aims to set up “qualitative system of education and training to provide the African continent with efficient human resources adapted to African core values and therefore capable of achieving the vision and ambitions of the African Union.” Thus, the present challenges towards achieving this goal are due to the poor reporting of education data in member states occasioned by the less then effective national EMIS systems.

It is observable that the national expenditure on education in African countries is still insufficient with some countries having as low as 7%. This is incompatible with the aspirations of continental strategies like the aforementioned CESA and Agenda 2063 aspiration 1 calling for a prosperous Africa based on inclusive growth and sustainable development. This aspiration intends to have African human capital fully developed through sustained investments based on universal early childhood development and basic education, and sustained investments in higher education, science, technology, research and innovation as well as eliminate gender disparities at all levels of education. It also aspires to expand and strengthen post-graduate education to have world-class infrastructure for learning and research.

Poor planning caused by lack of adequate resources clearly stand in the way of achieving the objectives of the aforementioned continental strategies. IPED through its EMIS support structure with the mandate of ensuring quality, responsive and inclusive education hence aims to support national EMIS systems across Africa with the ultimate aim of having a strong and formidable continental EMIS to help is effective education data reporting, planning and resource allocation towards the achieving of CESA objectives and Agenda 2063 goals which are all in tandem with the United Nations SDGs.

2. IPED PROPOSAL

Pan-African Institute for Education for Development (IPED, is a specialized institution of the African Union, tasked with the responsibility to function as Africa's Education Observatory. This is a central role in ensuring quality, responsive, and inclusive education development in Africa based on sound, accurate and timely information, to meet the individual and collective goals for the development of human resources and intellectual capacity in Africa. IPED transformed from the OAU African Bureau for Science and Education (BASE). One of its key focus areas is Education Management Information Systems (EMIS).

Through this proposal, IPED proposed to conduct a rigorous test survey that will produce findings that are useful to the African Union Commission (AUC) Education Department and the relevant ministries tasked with education development at all levels. In addition, the pilot will also serve to further refine the tool and gain feedback from researchers and academics. Data collection devices, servers and all other related technical assistance for this exercise will be provided by LabAfrique.

Since the final version of the Continental Education Strategy for Africa 16 – 25 (CESA 16-25) Indicators Manual is ready and it contains indicators that are yet to be piloted, this exercise will also serve as a pilot for one of the indicators (see A**ppendix 1)** in ten secondary schools. Any additional indicator that is of interest to the ministry can also be discussed and included in this process. The draft data collection instrument is attached herewith as **Appendix 2.**

Furthermore, there currently exists no comprehensive, standardized survey of the quality of education from the perspective of students that can allow for comparative analysis in Africa. Several such surveys exist across the world, such as the UK's National Student Survey (NSS) which is an annual survey of final year students of tertiary institutions that seeks to quantify student perspectives on:

- Teaching
- Assessment and feedback
- Academic support

- Organisation and management
- Learning resources
- Personal development
- Students' Union
- Internships/ practice placements

The findings of such a survey serve to inform decision makers at university level of the level of satisfaction of students in these areas and how they compare to other universities. The specific objectives of the survey will be to:

1. Improve understanding of student learning experiences
2. Inform change by the university and the Student Union to benefit current and future students
3. Provide a baseline for measuring trends over time
4. Develop recommendations for scaling up of the survey.

We proposed to conduct this survey in at least two universities. The data collection instruments are attached herewith as **Appendix 3**.

IPED proposed to utilize a participatory approach in the execution of a survey to conduct this exercises using the DataPlat platform. Student/Teacher interviews, Focus Group Discussions (FGDs) and Key Informant Interviews (KIIs) may be used wherever necessary.

The methods will capture all the survey objectives as outlined above. The questions will be prepared in advance and will be discussed with the national focal officers before actual data collection to ensure they effectively capture the required data.

Data collected from the student questionnaires will be analysed using the Statistical Package for Social Sciences (SPSS). Appropriate analysis including basic frequencies will be done to establish the strength and direction of relationships between variables under investigation. The data collected from FGDs and KIIs will

be transcribed and keyed into grids for ease of analysis. The data will be analysed by consolidating emerging themes from the FGDs, KIIs and literature review.

Based on the stakeholder consultations, documentation review and the survey, the IPED team will prepare a presentation of preliminary findings for presentation and discussion with the ministry and other stakeholders. This presentation will serve as a validation of the survey findings.

Based on feedback on the above, a report will be prepared on the lessons learned from the exercise with regard to the effectiveness of DataPlat and recommendations for future practice on the conducting of such a survey on a larger scale.

2. **African EMIS Systems**

a) Status of EMIS systems in Africa

Education Management Information System (EMIS) is a system for organizing information base in a systematic way for the management of educational development. EMIS is based in the ministry of education and tasked with collecting, processing, analyzing, publication, and distribution of education information for use in educational management. It is no secret that many AU member states are struggling with their EMIS systems due to various challenges. These struggles and the significance of having effective EMIS systems has prompted extensive support from partners like the UNESCO Institute for Statistics (UIS) and Global Partnership for Education.

Efficient EMIS systems are those that have high accuracy of education data obtained from schools. These data should be up to date to aid the allocation of per-capita funds to schools, monitoring of school enrollment and attendance, teacher turnover, address of emergent institutional issues and to inform the planning and policy formulation at the national level. However, many member states still grapple with the issue of data quality, timeliness, and in significant cases, data blanks.

3. **Known Challenges:**

Common challenges for effective EMIS systems in African Union member states funding, human resource, and infrastructure.

4. **Data Transportation**

This process refers to the collection and transmission of data from “collection points” (schools and institutions) into the National Education Repository. The capacity to carry our collection exercises varies from country to country, and from field experience, it seems it is the most important

FIELD EXPERIENCES

Interactions With Enumerators

- We hired enumerators suggested by the ministry officials.
- Enumerators were professional and experienced.
- We made the enumerators understand the importance of the platform and the exercise towards improved education data quality.
- Learning how to use the platform was easy.

Enumerator Training

- Training took on average one hour.
- Training was done on the features of the platform including designing a data collection instrument and how to use the DataPlat collector.
- Enumerators were also trained on the CESA indicators that were being piloted;
- Percentage of teachers qualified to teach STEM subjects.
- Indicator on education quality assessment from students perspective.
- The focus on the CESA indicators training was on how to localize the questions given the variances in education system across the continent.

Hardware

- The DataPlat collector relied on the hardware of the enumerators.
- 98 % of android smartphones and tablets by enumerators were compatible with DataPlat.
- For standardization during implementation, LabAfrique will also provide mobile devices for DataPlat collector.
- Some institutions requested to have their own hardware to ensure ease of data collection.

Interactions with Respondents

- The first focus was to develop positive relationships with respondents and administrators.
- We ensured that respondents were comfortable enough to answer the questions.
- One way we did this was by assuring them of the confidentiality of their responses.
- Importantly, the administrators of the institution went through the data collection instruments to make certain their integrity.
- Respondents (teachers and students) observed that the process took very short time, 2 minutes per interview.

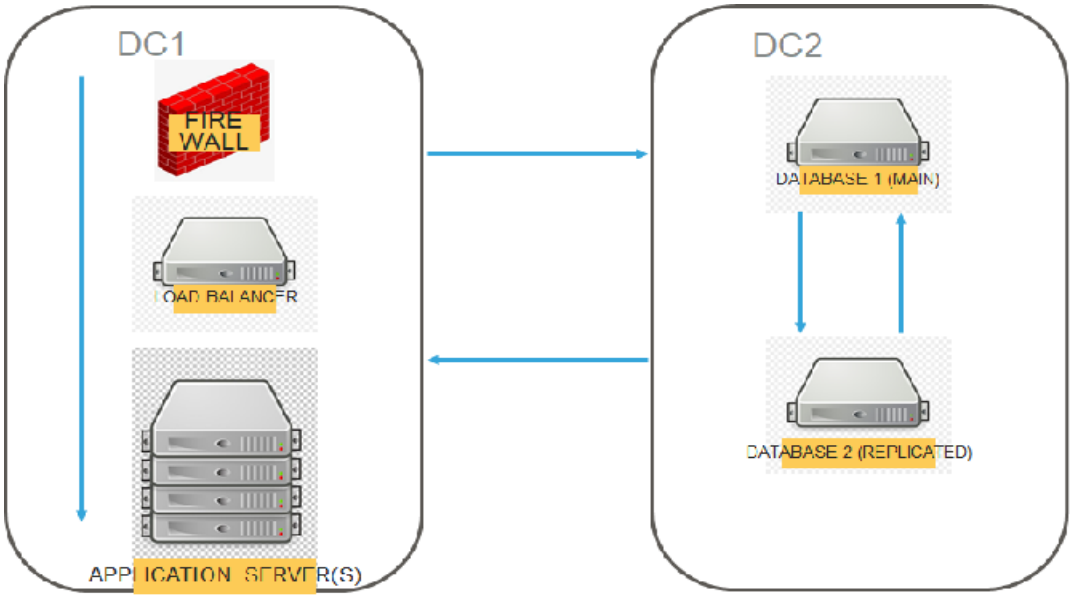
Challenges

- Network connectivity challenges were experienced by some enumerators during data transmission.
- The exercise slightly interrupted the academic activities in the institutions for both teachers and students.

- The data collection instrument was not in line with some countries' education system (different names for subjects taught).

DEPLOYMENT STRATEGY

a. Hardware and Server Setup



b. Server Details

Server Details					
	Load Balancer/Web Server	Application Server(s)	Database Server 1	Database Server 2	
Memory	32GB	64GB	48GB	48GB	
Disk	100GB	100GB	SAN	SAN	
CPU	Intel(R) Xeon(R) CPU E5640 @ 2.67GHz	Intel(R) Xeon(R) CPU E5640 @ 2.67GHz	CPU 32x Intel(R) Xeon(R)	CPU 32x Intel(R) Xeon(R)	
Software	Apache HTTPD	Glassfish / Apache HTTPD	MySQL	MySQL	

Other Peripherals

Storage			
Filesystem	**Size**	**Available**	**Cost**
Database	3 Terabyte (1.5TB on each of the servers)	1.5TB x 2	
Application storage	2 Terabyte	NA	

Services	
Type	**Version**
Glassfish	7.0.41
Apache HTTPD	1.15.8
MySQL	Version 8.0.12
Java	8.0_162

c. Data Collection Hardware

Type	**Requirement**	**Info**
Android	98% of all available android devices	Can capture all types of data.
iOS	All iOS devices	Can capture all types of data.
Web	All Modern Browsers + Internet Explorer	Can not capture all types of data

Software Requirement

Software	Vendor	Open Source Option
Operating System	RedHat Linux	YES
Glassfish Application Server	Oracle Systems	YES
MySQL Relational Database	Oracle Systems	YES
Apache HTTPD Webserver	Apache Software Foundation	YES
Apache Software Load Balancer	Apache Software Foundation	NO
F5 Hardware Load Balancer	BIG-IP Systems	NO

Human Resource Requirement

Resource Type	Number	Technical Skill Level	Function
Trainer	2	Expert	Responsible for training every other user that will use the DataPlat platform
Instrument Designer	2	Intermediate	Responsible for interpreting the data instruments and using the Designer component to design the instruments
Enumerator	As Need	Beginner	Responsible for the actual data collection and transmission
Administrator	2	Intermediate/Expert	Should be able to assist the data designer, Use the Administrative Dashboard to view data and generate simple reports, use the dashboard to export data in the proper formats. Should be able to import the exported data to the right application
System Administrator	2	Expert	Serves as a Level 3 System Support/Reliability Engineer. Should be able to write simple scripts to perform needed functions that are not built into the application and that doesn't require code change.
Code Maintainer	2	Expert	Responsible for code changes, upgrade and update to code, deployment and IATs could also part of the functions of the code maintainer if we want to maintain a lean team

Code Ownership and Updates

- The source code is owned by all AUC member states, which means every AUC member can request and have access to the source code
- Post Deployment, the platform will continue to take inputs from the industry and provide updates
- Security Updates will be provide as at when due.
- All updates will be provide free of cost to all member participants, source will be contributed to the source control.
- Community participants to the code will be welcome, reviewed by the AUC and then if approved, merged with the source code.

Support Structure

Support Level	Function	Responsible Entity
Level 1	Filters the Help Desk calls and provides basic **support** and troubleshooting, such as password resets, break/fix instructions, ticket routing and escalation to **Level** 2 and **Level** 3 **support**. May also escalate to outside vendor maintenance (Level 4), as needed. Also a L1 Tech Support analyzes information about the user's issue and determines the best way to resolve their problem.	Host Country
Level 2	L2 support is generally reserved for desktop, laptop, and other user devices but it may also share work with L3. L2 generally handles break/fix, configuration issues, troubleshooting, software installations, hardware repair. They handle escalated issues that L1 support is not equipped to handle. L2 will sometimes escalate to L3, depending on the issue and the way the Help Desk operates.	Host Country
Level 3	Troubleshooting, configuration, database administration, and repair for server, network, infrastructure, Data Center, email, file shares, and other infrastructure issues. Besides always having the ability to deploy solutions to new problems, a Level 3 tech usually has the most expertise in a company and is the go-to person for solving difficult issues.	Host Country
Level 4	Not a commonly used term. Level 4 refers to those people outside your organization that you can escalate issues to. This usually involve hardware and software vendors, such as vendor software support, printer and copier maintenance, heavy equipment maintenance, depot maintenance, etc. Level 4 support is contracted by an organization for specific services, but they are not part of the organization.	Service Provider