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MINISTRY OF EDUCATION AND SPORTS



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“Strengthening of the Education Management Information System (EMIS) Program”

An EQUIP 2 ASSOCIATE AWARD

QUARTERLY PROGRESS REPORT NO 5 TOGETHER WITH THE INCEPTION REPORT FOR EMIS3 ADDITIONAL TASKS 31 March 2005

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1 STATUS OF EMIS3 ACTIVITIES

1.1 Background

Uganda's Education Management Information System (EMIS) measures the state of the country's education system on an annual basis to ensure effective education management and planning. The primary source of current EMIS data is the annual schools census. By supplying timely, relevant and reliable information about schools, pupils, teachers and non-teaching staff, classrooms, textbooks, and infrastructure, the annual school census and its subsequent output (the Annual Statistical Survey, special briefs, and the Education Sector Summary) the EMIS has become vital to the daily planning and management activities of the Education Planning Department (EPD) within the Ministry of Education and Sports. This 5th report covers the period December 2004 to March 2005 as well as covering the Tasks and Approach to be used for the EMIS extension through June, 2005.

1.2 Strengthening EMIS – Completed Activities

In November, 2003, USAID supported a Phase 3 of EMIS activity with the EPD. This new phase introduced nation-wide School Mapping, as well as further consolidation of work done in the first two phases begun in 1999. Phase 3 covered six activities, which were all completed by Dec 31, 2004. These were

1. School Mapping of all schools/institutions, except Pre-Primary schools, to improve credibility of the EMIS data to all stakeholders
2. Intensive ED*ASSIST policy and maintenance training for key MoES staff in Washington DC
3. Follow-on EMIS Skills training for MoES staff, district education officers and district planners
4. Coordination and supervision of the ESIP-II document
5. Creation of a Mini-Census for twice-yearly updates for Primary schools. This activity was replaced with a School Attendance Register system (forms, process, software, and training) which is more relevant to the Ministry's current needs
6. Completion of Wide Area Network (WAN) Concept. This task was cancelled and the funds re-allocated. A brief summary included in this report below shows the alternative technologies that are available in Uganda for WAN operations. Prices and details of district coverage can be obtained from the service providers

1.3 Completion of the WAN Concept

In the course of working with the MOE, and as part of a related effort called Connect-Ed, the Equip 2 team has found options that may be available to the MOE for support of a broader communication network (WAN). Such a network, pilot tested under Phase 2, was found to be too expensive to sustain—particularly if it required regular District contributions to maintenance. New options are now available—some lower cost overall, some providing for better financing mechanisms—i.e. one annual payment serving multiple users. Appendix C provides substantially more detail. In the list below, we

have assumed that District offices will need to link to Headquarters via an Internet connection—which would allow: a) access to the MOE Website, and b) sending and receiving emails. The present communication options for most Districts are the following:

1. BushNet option-1: 64 Kbps wireless Internet access
2. BushNet option-2: 64 to 128 Kbps dedicated line wireless Internet access, shared by up to twenty (20) districts
3. AFSAT: 64 Kbps I-WAY satellite link
4. Uganda Telecom Ltd (UTL) option-1: 64 Kbps leased landline
5. UTL option-2: 128 Kbps leased landline
6. UTL option-3: VSAT 64 Kbps satellite link
7. UTL option-4: Low speed CDMA wireless telephone Internet access using USB port of a computer linked to a special telephone set
8. MTN Uganda: low speed CDMA wireless telephone Internet access

At present, options 7 and 8 are the most feasible, since low speed wireless Internet access is quite sufficient for District needs. Both options presently require under \$10,000 of capital investment, and communication fees for the entire country of approximately \$30,000 annually. Of the 8 options listed, these are the lowest cost and potentially the most robust.

1.4 EMIS3 Additional Activities

When the results of the main School Mapping exercise were presented to education stakeholders and their partners during November 2004, the need for additional work was highlighted. Additional tasks were identified as:

1. Map additional education sites, including 570 coordinating centres
2. Introduce new education quality indicators, including survival rates (P5 & P7), P7 Completion Rate and Schools P7 Examination Performance Index, disaggregated by sex
3. Create linkages between EMIS, the Uganda National Examinations Board (UNEBC), and the GIS Tool – a critical step for sustainability
4. Production of additional GIS maps for districts and the proposed Parliamentary presentation
5. Intensive technical training for GIS maintenance and enhancement to support the district teams
6. Creation of core analytical & training teams and supporting additional district level training to improve analytical skills and data collection & updating

These activities have now been accepted and funded. The following section outlines the approach and methodology as well as timeline, products, and progress to date.

2 MAPPING COORDINATING CENTRES

2.1 Background – Role of Coordinating Centres

Coordinating Centres are normally located at selected Primary schools. Their basic role is to coordinate activities for Primary schools in their catchment areas and to maximise usage of resources.

2.2 Scope of Work

There are about 570 coordinating centres, spread throughout all districts of Uganda. Under EMIS 3 Extension, each centre will be visited once and its GPS coordinates recorded. This data will be combined with EMIS and base map data to generate updated GIS maps that display coordinating centres. A limited number of updated maps will be printed.

2.3 Pre-fieldwork Preparations

1. Create a provisional list of coordinating centres
2. Check the list of coordinating centres against the master list of schools/institutions already mapped. Those coordinating centres that have already been mapped will not be re-visited
3. Verify the lists with MoES and DEOs
4. Design the fieldwork instrument (questionnaire)
5. Review and update the fieldwork methodology
6. Sensitisation by MoES of the heads of all coordinating centres to be mapped, plus provision of letters of introduction

2.4 Training

Refresher training in the use of GIS equipment will be organised for district education officers (County Inspectors of Schools – CIS) who will participate in mapping fieldwork

2.5 Fieldwork Mapping Methodology

2.5.1 Role of the Regional Manager

The regional managers will coordinate the work of the fieldworkers (CIS) in the case of large districts like Gulu and Mbarara. For the districts with a small number of coordinating centres it is more cost-effective for the regional manager to carry out the mapping directly in person, after consulting the DEO/DIS to verify/update the list of coordinating centres. Coordinating Centres located at Primary schools that were mapped during the main school mapping exercise of year 2004 will not be visited again because their coordinates are already in the GIS database.

2.5.2 Role of the Fieldworker

Where appropriate, particularly in large districts, the CIS will be used as fieldworkers. Their duties will include:

1. Verify the list of coordinating centres
2. Prepare a Work Schedule
3. Visit the coordinating centres and take GPS readings
4. Report to the regional manager for the transfer of data

2.5.3 Security Challenges

Districts where there is currently some form of insecurity are:

NORTH (6) – Adjumani, Apac, Gulu, Kitgum, Lira, and Pader

NORTH EAST (4) – Kotido, Moroto, Katakwi, and Nakapiripirit

WEST (2) – Bundibugyo and parts of Kasese

Funds will be provided for fully armed escorts wherever and whenever needed

2.6 Design of the Mapping Instrument

The starting point is the questionnaire that was used in the main School Mapping exercise. Questions 8 to 13 and 15, which referred specifically to Primary schools, will be dropped.

2.7 Location of Coordinating Centres, by region

Table1 – Location of Coordinating Centres

REGION	NO of CCs
Central	121
East	143
North	120
West	177
TOTAL	561

3 PROPOSED APPROACH – OTHER ADDITIONAL TASKS

3.1 Additional GIS Maps

3.1.1 GIS Maps Produced So Far

Standard booklets of thirteen maps have been produced for all districts and distributed through MoES Education Planning Dept. In addition, two A0 maps were printed for each district

3.1.2 Contents of Standard Booklet of District Maps

There thirteen (13) maps in each district booklet.

Map No.

1. Base map of Uganda
2. PTR at district level
3. PCR at district level
4. GER at district level

Maps specific to a particular district:

5. Location of all schools/institutions
6. PTR for all Primary schools in the district; plus map 6a that shows PTR against a background of population density
7. PCR for all Primary schools in the district; plus map 7a that shows PCR against a background of population density
8. Primary schools catchment areas (based on 3 kms)
9. Secondary schools catchment areas
10. Abandoned Schools
11. Coordinating Centres

3.1.3 Scope for Additional Maps

- Each district will receive five additional booklets of maps to be distributed to: the LC5 Chairperson, Secretary for Education, CAO, DEO/DIS, and the district planning office
- A presentation on School Mapping and the GIS Tool will be made to a select committee of Parliament. Copies of specific maps focusing on PTR and PCR will be provided to all members of Parliament. A brief user guide will be provided.
- All DEOs will be provided with county level maps of PTR and PCR

3.1.4 Challenges to Updating GIS Maps

The Annual Schools Census for Y2005 is planned to take place during April 2005. Two weeks are normally reserved for fieldwork, plus another two weeks for the questionnaires to be returned to MoES via DEO offices. Data editing, capture, verification, and cleaning normally lasts between 2 to 4 months. Thus it is extremely unlikely that Y2005 EMIS data for Primary schools for example PTR & PCR will be available by June 30, 2005 – the expiry date for the EMIS3 Additional Tasks

3.2 Link EMIS, UNEB and GIS Tool

3.2.1 Existing UNEB Dissemination Mode

After exam results have been officially released, UNEB provides the MoES with a summary of the results at district level, and not school level. This information has been used in the past to produce district exams performance index. This has created a problem in linking data through to the schools. We note that the school of origin of a student is not recorded on standard UNEB test forms—just the school of test administration. Hence, shared schools—that serve as a testing site for multiple schools-- will create a problem, this year, of direct school links to testing data.

3.2.2 UNEB Status Quo Report

A brief study of UNEB procedures will be made. This will be used in determining the best mode of interface between UNEB and EMIS.

3.2.3 Linkage Methodology

EMIS and GIS Data

Currently the basic GIS tool uses static tables extracted from the EMIS system. This task involves software development that will enable a link between the GIS Tool and the EMIS system (ED*ASSIST). Currently both the EMIS and GIS data is managed by the MoES Planning Department. It is important that the responsibility and activity of linking EMIS and GIS be kept together, so as to avoid the creation of parallel, unlinked databases. Both our proposed approaches and software will target a “seamless” integration.

UNEB Data

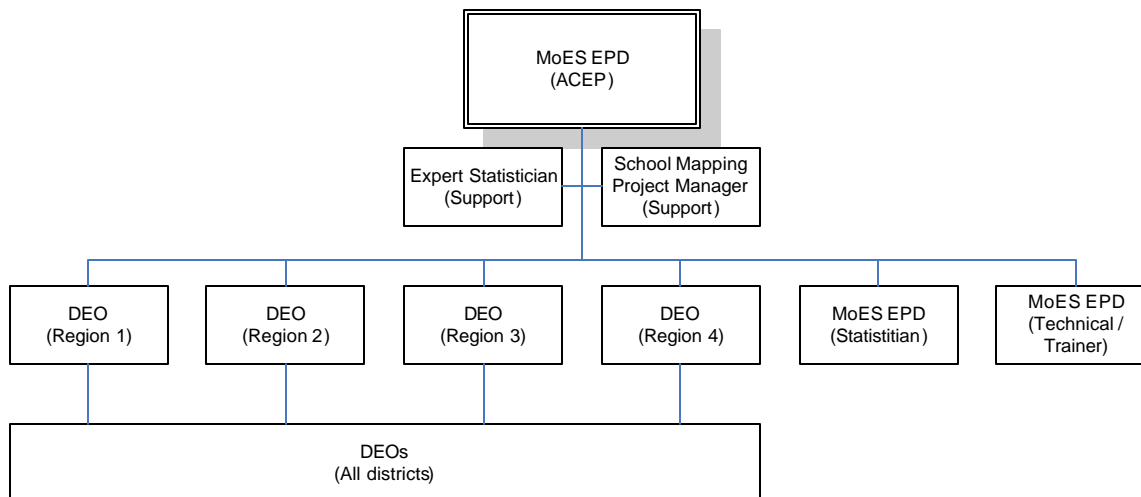
The Uganda Examinations Board (UNEB) manages a completely different system outside the MoES Planning Department thus a link between the different data sets entails the development of specific procedures to do a data transfer (a data “dump”) from the UNEB database that can be used by the GIS and EMIS applications.

3.3 Create Core District Analytical & Training Teams

3.3.1 Objective of Creation of Core District Analytical/Training Teams

The main purpose of this activity is to ensure sustainable EMIS support to the districts. This can be accomplished by establishing a core team within the existing MoES head office and district structures

3.3.2 Composition of the Core Analytical/Training Team



The MoES Education Planning Department (EPD) will be steering the Core Analytical & Training Team [CATT team]. A statistician and a technical staff member from EPD will also be included in the team. They will be capacitated to support the DEOs on a regional level. One DEO from each region in Uganda will be selected to be part of the team. These regional DEOs will be capacitated to support the DEOs in their specific regions. The consultant will only play a support role through the School Mapping Project Manager and the Expert Statistician to the team. This proposed structure will assist in the sustainability of the team.

3.3.3 Methodology

The core team is to support additional district level training to improve analytical skills, data collection and updating. The key steps in setting up this team will be:

- Identify suitable candidates for the team, both from MoES and districts
- Establish roles and responsibilities
- Training and capacity building within the team structure
- Initial facilitation
- Monitoring the outcomes of the team

3.4 Intensive Technical Training in GIS Maintenance and Enhancement

The intensive training is aimed at supporting the district teams

3.4.1 Training Objective

To provide grounding in the technical aspects of the GIS Tool for a limited number of staff from MoES and a few DEOs and to provide training in the use of GIS maps for DEOs and MoES senior staff.

One of the most important end-users of the GIS maps are the DEOs at district level. If the need for maps is created at a district level, then the GIS Tool will stay alive and current. However, to establish a need, the outputs of the GIS Tool must be understood and used by the DEOs. It is clear that existing maps that show the current state of education are widely “sought after.” We need to help ensure that DEOs make effective use of this demand—not only serving this demand, but using it as an opportunity to offer the appropriate educational messages.

3.4.2 Training Outcome

- DEOs capable of using the GIS maps
- MoES Senior management capable of using the PTR/PCR maps as planning tools
- A technical team capable of maintaining and enhancing the GIS Tool

3.4.3 Syllabus Outline

- A Users Guide for GIS maps will form the syllabus for DEOs/DIS and MoES senior staff
- Technical GIS training will cover procedures for updating the different data layers and processes for enhancing the GIS Tool

3.4.4 Training Approach

The capacity to understand and use GIS maps will be built at district level by:

- Sensitising DEOs about the GIS outputs/maps through the channels normally used by MoES (DEO training sessions, workshops, etc)
- Each DEO will be visited and all the GIS maps will be explained in detail and training will be provided in basic GIS concepts

A technical team composed of staff from MoES and, if found appropriate, a few DEOs or their designates will be trained in the maintenance and enhancement of the GIS Tool

An opportunity will be taken at one of the MoES committee meetings to train MoES senior staff in the use of the GIS maps

3.5 Introduce New Education Quality Indicators

3.5.1 Objective of New Indicators

Currently the most important education indicators of PTR, PCR and GER are included in the GIS output. There is a need to include additional indicators. The first step is to introduce the new indicators into the ED*ASSIST application during 2005.

3.5.2 Indicators to be introduced

- Survival rates to P5 and P7
- P7 completion rate
- Exams performance index, based on UNEB exams results

3.5.3 Definition of the New Indicators

Standard UNESCO definitions, plus updates for the Ugandan context will be used.

3.5.4 Adding New Indicators to the GIS Tool

The inclusion of additional indicators in the GIS Tool will be determined in consultation with the MoES and should be contained to about 4 new indicators. Because the district training and distribution of maps will be done from the beginning of the project, the distribution of the new indicator maps are excluded from this task and will be the responsibility of the MoES after June 2005.

4 WORK PLANS AND DELIVERABLES

4.1 EMIS3 Additional Work - High Level Work Plan

Table 2– High Level Work Plan: EMIS3 Additional Work

	Activity	Start Sate	Completion date
1	Map CC.s	Feb 2005	June 2005
2	Introduce New Quality Indicators	April 2005	June 2005
3	Link EMIS, UNEB, and GIS	March 2005	June 2005
4	Additional Maps	March 2005	May 2005
5	Technical GIS Training	April 2005	June 2005
6	Create Analytical/Training Team	March 2005	August 2005

4.2 Work Plans for Mapping Coordinating Centres

Coordinating Centres mapping fieldwork covers a number of activities:

- Deliver the maps to the districts – Size A0 and booklets of size A3
- Train the DEOs in the understanding and use of the GIS maps for Pupil Teacher Ratio (PTR) and Pupil Classroom Ration (PCR)
- Carry out an assessment of the district education office [equipment, information flow from MoES, training needs, etc]

Table 3 – Map CC.s – Sub-Tasks

Item	Sub-Task	Timing
1	Preparations –Questionnaire, Methodology, Re-training	March 2005
2	Mapping Fieldwork	March – May
3	Data Capture	May 2005
4	Data Cleaning	June 2005
5	Update GIS data sets	July 2005
6	Print selected maps	August 2005

For purposes of mapping coordinating centres, Uganda has been divided into four mapping regions with the following number of districts: Central(13), East(18), North(11), and West(14). Regional managers will also visit the Municipal Education Officers in the thirteen municipalities of: Arua, Entebbe, Gulu, Jinja, Kabale, Kabarole, Lira, Masaka, Mbale, Mbarara, Moroto, Soroti, and Tororo

Table 4 – Detailed Fieldwork Schedule for Mapping CC.s – by district

PERIOD	CENTRAL	EAST	NORTH	WEST
14-18 March 05	Luweero Kampala	Jinja, Kamuli Iganga	Preparations	Preparations
21-25 March	Kayunga	Mayuge Bugiri	Lira	Kanungu Rukungiri
28 March to 01 April 2005	Kalangala I	Tororo	Apac	Mbarara
04-08 April 05	Kiboga	Busia Mbale	Masindi	Mbarara cont. Kisoro
11-15 April	Sembabule Rakai	Sironko Kapchorwa	Nebbi Arua	Kasese Kabarole
18-22 April	Mubende	Pallisa Kumi	Arua cont. Yumbe	Kamwenge Bushenyi
25-29 April	Nakasongola Mukono	Soroti Kaberamaido	Moyo Adjumani	Bundibugyo
02-06 May 05	Masaka	Katakwi Moroto	Gulu	Kyenjojo Kibaale
09-13 May	Mpigi	Kotido	Pader	Hoima
16-20 May 05	Wakiso	Nakapiripirit	Kitgum	Kabale Ntungamo
23-27 May	Re-visits	Re-visits	Re-visits	Re-visits

By current projection (March 31), all fieldwork will be completed by May 20. One week has been reserved for re-visits in case the coordinates are out of range.

4.3 Key Tasks – New Education Quality Indicators

Table 5 – Work Plans – Introduce New Quality Education Indicators

Item	Sub-Task	Timing
1	Define the new indicators using UNESCO base definitions <ul style="list-style-type: none"> • Survival to P5 and P7 • P7 Completion rate • Exams Performance Index 	April 2005
2	Develop software	April/May
3	Test software	May 2005
4	Compute the new indicators for Year 2004	June 2005
5	Publish the new indicators for Y2004	June 2005

4.4 Work Plans – UNEB/EMIS Linkage

Table 6 – Key Tasks – UNEB and EMIS Linkage

Item	Sub-Tasks	Timing
1	Survey – UNEB Status Quo Report	March 2005
2	Design Functional Specifications	April 2005
3	Develop Software	April 2005
4	Software Testing	April 2005
5	Prepare formal letters – MoES P/S to UNEB Secretary	April 2005
6	Import from UNEB exams results data for Y2004, all levels	May 2005
7	Install the software application at EPD - MoES	May 2005
8	Correlation Analysis of Exams Results Index versus other education indicators, like PTR and PCR	June 2005
9	Present findings of the correlation analysis	June 2005

4.5 Key Tasks – Additional Maps

Table 7 – Work Plans – Additional Maps

Item	Sub-Tasks	Timing
1	Collect User Requirements	Feb/March 2005
2	Draft Maps	March 2005
3	Train DEOs	March/April 2005
4	MoES Feedback on GIS maps	March/April 2005
5	Print and Distribute new maps	April/May 2005
6	Presentation to Parliamentary Select Committee	Mid-May 2005
7	Transfer GIS Equipment to MoES offices	August 2005

4.6 GIS Training Work Plans

There are four levels of training as shown below. For sustainability, priority should be given to Training the MoES Trainer. Stage two – the trainer then trains MoES senior staff, and DEOs when opportunities appear. Technical training in maintenance and enhancement of the GIS application will be reserved for a select few staff who have the correct mix of technical background and practical experience with using GIS maps. This technical team will consist of staff from EPD – MoES and a few suitable DEOs

Table 8 – GIS Training Work Plans

Item	Sub-Tasks	Timing
1	Preparations – Syllabus, Training Materials, etc	March 2005
2	Train the MoES Trainers	March 2005
3	Train DEOs in using GIS maps	March-May 2005
4	Train MoES senior staff by MoES in-house Trainer --Assisted by AED/AFRICON consultants	May 2005
5	Technical Training for a selected team	May/June 2005
6	Presentation to Parliamentary Select Committee	May 2005

4.7 Key Steps – Create Core Analytical/Training Team

Table 9 – Key Steps – Create Core Analytical/Training Team

Item	Sub-Tasks	Timing
1	Pilot Survey in 3 districts	March 2005
2	Identify Team Members	April 2005
3	Define functions of the Team	April 2005
4	Assess team capabilities	April 2005
5	Assign roles and responsibilities	May 2005
6	Team capacity building	May/June 2005

4.8 Deliverables – EMIS3 Additional Activities

4.8.1 Map Coordinating Centres Deliverables

GIS maps with all the 570 centres

4.8.2 Additional GIS Maps Deliverables

- Five sets of GIS maps for each district
- GIS County maps
- Selected District maps for members of Parliament, plus a short presentation

4.8.3 Link EMIS, UNEB and GIS Deliverables

A sustainable system put in place to link EMIS, UNEB and GIS

4.8.4 Create Core Analytical/Training Team Deliverables

Core Analytical/Training Team in place

4.8.5 Intensive Technical Training in GIS Maintenance & Enhancement Deliverables

- Technical GIS Training workshop report
- District officers GIS training report
- Report on senior managers workshop and the next steps

4.8.6 Introduce New Education Quality Indicators

Results of the new indicators for Y2004

5 PROGRESS REPORT – EXTENSION ACTIVITIES

The report below gives the progress of the six EMIS3 extension tasks, as at March 31 2005

5.1 Mapping Coordinating Centres

5.1.1 Work Completed by March 31, 2005

By March 31, 2005 mapping of coordinating centres had been completed in the following districts:

- Central – Kampala, Luweero, Kayunga, and Kalangala Islands
- East – Jinja, Kamuli, Iganga, Mayuge, Bugiri, and Tororo
- North – Lira and Apac
- West – Kanungu, Rukungiri, and Mbarara

5.1.2 Work Plans for April 2005

- Central – Kiboga, Sembabule, Rakai, Mubende, Nakasongola, and Mukono
- East – Busia, Mbale, Sironko, Kapchorwa, Pallisa, Kumi, Soroti, and Kaberamaido
- North – Masindi, Nebbi, Arua, Yumbe, Moyo, and Adjumani
- West – Kisoro, Kasese, Kabarole, Kamwngwe, Bushenyi, and Bundibugyo

5.1.3 Summary of Comments made by DEOs

- DEOs prefer PTR/PCR maps at county level, as district maps are too congested for large districts
- School Lists should be laminated for longer use
- Provide extra copies of the A0 laminated maps showing PTR for the district
- Introduce latitude and longitude in the maps
- Maps for municipalities should be generated at sub-county level (Municipality Divisions)

5.2 Introduce New Education Quality Indicators

In preparatory stage

5.3 Create UNEB and EMIS Linkage

- UNEB Status Quo is virtually ready
- This report highlights the record layout of files to be exported from UNEB (school level layout)

5.4 Produce Additional GIS Maps

- Additional maps have been produced for the 13 municipalities
- In some districts the DEOs request for more detailed PTR/PCR maps at county level has been met already
- Purchase of extra A3 paper and ink cartridges has been completed, and the GIS computer system is ready to handle new printing
- Printing of new maps is held up due to lack of feedback from MoES

5.5 GIS Training

- The MoES GIS Trainer/Expert has been trained (March 2005)
- DEOs are being trained in the use of GIS maps by mapping regional managers, on a continuous basis
- Dates have not been set by MoES for training MoES senior staff and presentation to select committee of Parliament

5.6 Create Core Analytical & Training Team

- Draft report on pilot survey of 3 districts is ready
- The Steering Committee will use the final version of the report on the pilot survey to give clear direction to this task

6 WAY FORWARD

There are several critical points for the implementation of this work scope:

1. Agreement on the participation of the County Inspectors of School. These need to be cleared with their supervisors and their availability made clear. The timetable here is also time-critical.
2. A letter of understanding and agreement between the MOES and UNEB. After the discussion of possible procedures and data needs, there should be a formal statement of need and collaboration between both EPD and UNEB. Testing data are always sensitive, so there needs to be both a statement of data to be exchanged (at the school level) and any special requirements that UNEB feels are necessary to guard the data's integrity. It should be made clear that School level aggregation of annual results will be appearing annually as part of EMIS reporting.
3. A coordination of all District level capacitation exercises with the appropriate political leaders—such as the Chief Administrative Officers (CAOs). These persons could make substantial use of GIS based information and should have an opportunity to observe the training.
4. EQUIP 2, in accord with early discussions prior to the extension, will be requesting a “no cost” extension to the project in order to allow extra time for training of Districts, and to allow EQUIP 2 TA to participate in MOES activities prior to the Education Sector Review.

Appendix A: Coordinating Centres – Mapping Instrument

Appendix B: Options for WAN Technologies in Uganda