PROJECT MANAGEMENT & IMPLEMENTATION UNIT

SINDH EARLY LEARNING ENHANCEMENT THROUGH CLASSROOM TRANSFORMATION
REFORM SUPPORT UNIT (RSU)

SCHOOL EDUCATION & LITERACY DEPARTMENT

TERMS OF REFERENCE

Software Engineer

The Sindh Early Learning Enhancement through Classroom Transformation (SELECT) Project encompasses a multi-pronged approach towards improving the quality of both teaching and learning practices in primary education, with a particular emphasis on foundational reading in grades 1 through 5. The Project comprises a series of focused and flexible implementation strategies, targeted at the school and meso-levels (personnel and systems at the school, taluka and district levels). The Project supports improvements in the transition from primary to elementary school, as well as a reduction in dropouts through targeted student attendance redress procedures. Desired Project outcomes would eventually contribute to reductions in learning poverty and in the number of out-of-school children.

Project Objectives	The overall development objective of this Project is to improve the reading skills of early grade primary students and increase student retention in primary schools in selected districts.
Project Cost	IDA: US$100 million GPE ESPIG: US$29.9875 million GPE MG: $24.775 million **Total: US$154.7625 million**
Expected Project Duration	August 2021 – April 2026
Component 1	Transforming teaching practices in the early grades ▪ **Subcomponent 1.1:** Implementation of a Continuous Professional Development (CPD) model for improved literacy skills in the early grades ▪ **Subcomponent 1.2:** Behavioral nudges for improved learning ▪ **Subcomponent 1.3:** Technical Assistance (TA) for transforming teaching practices Under this component, a CPD model will be implemented with the aim of improving literacy skills in early grades. Behavioral nudges will be utilized to improve student wellbeing and mitigate potential risks of dropping out. TA will also be provided for institutional capacity building and support.

Component 2	Improving the physical learning environment in selected primary schools, and upgrading them from grade 5 to grade 8, supporting the teaching and learning aims set out in Component 1 and the student retention aims set out in Component 3. Cost-effective and carbon-efficient technologies will be utilized to introduce needed climate adaptations and mitigate climate risk.
Component 3	Improving system capacity for effective school leadership and management support: ▪ **Subcomponent 3.1:** Establishing a technology-based student attendance monitoring system ▪ **Subcomponent 3.2:** TA and capacity building for school leadership and local education office management to mitigate student dropout A technology-based student attendance monitoring system will be established. TA will be provided, and capacity building will take place for school leadership and local education office management increase their ability to use school-level data in conjunction with Component 1 activities to mitigate student dropout.
Component 4	The Reform Support Unit (RSU) will monitor and evaluate the Project, monitor safeguards, oversee procurement and financial management, and will be responsible for overall management and coordination of the Project on behalf of the School Education and Literacy Department (SELD).
Geographic Scope	The Project will be implemented in twelve selected districts in Sindh: Badin, Ghotki, Jacobabad, Kambar-Shahdadkot, Kashmore, Mirpurkhas, Mitiari, Sanghar, Shikarpur, Sujjawal, Tando Muhammad Khan, and Thatta.

1. Implementation Arrangement

The Project will be implemented by SELD of the Government of Sindh (GoS), through the Project Management and Implementation Unit (PMIU). This will be housed in the RSU, which will monitor overall implementation of Project activities with TA support. The RSU will be headed by the CPM (Chief Programme Manager) who will be responsible for providing overall Supervision.

The design, implementation planning and construction supervision activities for the Component will be managed through the consulting firm. The firm will be hired by the RSU and will be responsible for conducting needs assessment, preparing site specific master plans and detailed designs and drawings, construction supervision and quality assurance of the Project.

2. Scope of Work

The task of an expert Software Engineer is to ensure full software development life cycle (SDLC). Design layout, flowcharts and prepare standardized documentation according to project requirements and its solutions. Design and write standardized code. Determine specifications and operational feasibilities. Develop new application or add new modules in exiting application and integrate software components into system. Enhance the scalability of mobile & application by review the code, rewriting the code. Develop multiple reporting applications/ dashboards and integrate with application etc.

Direct supervision and directions of the Project Director/ Manager MIS the Expert Software Engineer shall perform the following tasks and responsibilities:

- Understanding of the needed development/integrations according to project requirements. Considering the long-term sustainability in mind.
- Develop Software. New applications/integrations/scripts by considering scalability. Maintain users log in simultaneously accessing different modules or add various modules to exiting application (Web & mobile), write test code, review and rewriting code as per requirement of the project.
- Develop multiple reporting applications/ dashboards and integration with application as per requirements of the project. Consolidate all into one larger dashboard.
- Setup ODK locally on SELECT hosting with support from System Engr. Built ODK forms for different applications of SELECT. Build data syncing between ODK & select Web systems
- Setup tangerine application locally on SELECT hosting with support from System Engr. Customize tangerine & Integrate to larger SELECT MIS system.
- Ready to learn any technology proposed (in a specified time) for a specific project and apply it in the development/integration phase.
- Integrate existing software products and get in/compatible platforms to work together.
- Optimization of databases. Configuration of databases. Remodeling of databases for optimized output as necessary.
- Follow ISO 27001 standards for data/ deployment/ development security. Ensure same is applied on customized software's for SELECT project.
- Write scrips & webservices for systems automation planning, interfacing and implementation of data efficiency, safety and consistency. Develop utilities (Webservices /DB links) for synchronization and sinking of data.
- Maintain application and fix the bugs whenever occurred.
- Apply checks on application to provide role-based access to users.
- Assist the management in drafting the project technical needs, and the needed terms of reference for any software procurement exercise.
- Assist the Lead MIS in analyzing the existing materials including all software, documents, evaluating the current technological needs and its implementation.

  Analyze, evaluate and draft reports for any envisioned & received application (s)/software from any IT firm i.e., source code, document, manuals, flowchart, SRS, UAT result, application paths etc. and run that application smoothly onwards and make changes whenever required as per project requirement time to time.
- Ensure complete takeover of developed software systems by external partners – once completed. Ensure all technical documentation; source code & step by step configuration guide is provided.

Ensure all technical workflow & source code is understood and necessary transition of knowledge is done before signoff.

- Assist the project in the development of the software and any task related to the software development testing.
- Keep all versions of source code on a repository (accessible to the project) for all software's developed by the firm & inhouse.
- Coordinate with technical team for technical consultation to improve system.
- Meeting the project Team when requested.
- Providing technical assessment, feedback and recommendations related to the progress of work done.
- Participating in the launching of the installation of the application and other related meetings as necessary.
- Being ready to work on a testing host server to put the developed version and any new software changes on a daily basis.
- Performing all fixes/new components required by the IT Firm during the agreed duration.

  Perform any other tasks requested by the IT Firm and related to the system.

Expected Outputs and Deliverables

Progress towards achieving each task during the contract will be monitored on a regular basis and with reference to a clear set of deliverables, including, where needed/applicable:

- Initial and Final development detailed plan and evaluation of the start status and final status.
- The Detailed infrastructure/ architectural Specifications Document. Complete current & expected hardware & installed software systems diagram(s).
- Developed applications, integrations, databases & Deployed applications.
- SRS, Source code (all versions), manuals, documentation.
- Bi-Weekly Progress Reports.
- End-of-mission report that concludes mission and assesses it.
- All related electronic materials (source code CDs, e-books, passport drives, hard disk, USBs etc.) acquired as part of the project (originals where applicable). To be available to lead resource & project management at all times.
- All necessary documentation (hardware and Software): to maintain & depict the sites where the software has been installed and all related passwords. To be available to lead resource & project management at all times.
- Procedure of back up and the disaster recovery plan for service continuity.

- Any other information related to the system.
- Quality Assurance and test results.

Qualifications of the Successful Individual Contractor

1. Education: at least 16 years' education from HEC recognized University Degree in BS/ B.E/MS in Computer Science/Information technology/ software engineering or equivalent.

2. Experience: At least 6 years of relevant experience in software development (Android/iOS application, Web system (PHP, .NET), SDLC, Web services, SQL writing, SCRUM & waterfall model.

    a Android/iOS application [2 Year required]
    b Web system (PHP + .NET) [2 Year required]

    PREFERRED
    (5% additional marks).
    Experience with ODK

Functional Competencies

Ability to plan, prioritize, manage a demanding workload and meet the set deadlines. Make things work; a doer attitude.