ANNEX 2. TERMS OF REFERENCE FOR INSTITUTIONAL CONTRACT

Reference: LRPS-2023-9182513

Title: Implementation of Coding and Robotics Programme in SA Schools

Location: South Africa

Duration: 205 days over approximately 18 months

Background and Justification

The world as we know it continues to rapidly change because of technology, and the careers of the future (across disciplines) are leaning towards computer-based skills[2]. In 2014, the Department of Higher Education and Training (DHET) identified Information Technology (IT) as a scarce and critical skill[3], with data scientist skills specifically high in demand[4]. This finding led to the Departments of Labour (DoL) and Home Affairs (DoHA) developing and approving policies and guidance's that encourage migrant workers to work in South Africa and help fill the shortage of qualified IT professionals by inviting them to apply for and granting them a Critical Skills Work Visa[5].

In the South African education sector, coding and robotics is recognized as a subject that is central to function in a digital and information-driven world, as it is concerned with the various inter-related areas of Information Communications Technology (ICT), Engineering, and Coding in the context of 21st Century technologies[6]. Through participation in coding and robotics, learners not only are able to apply digital ICT skills, but they are also taught to solve problems, think critically, work collaboratively and creatively, and communicate effectively while acquiring skills and competencies for a changing world[7].

An analysis of the data in the education sector highlight challenges that have the potential to hinder progress in the introduction and roll out of coding and robotics in schools. Some of these challenges include lack of standardized, quality, online educational content; low child literacy rate; the high cost of data; limited connectivity in rural areas; no support structures for educators to develop their skills further; limited teacher training and development; and lack of investment into emerging technology. In response to this, UNICEF is supporting the Department of Basic Education through the Technokidzz programme which aims to:

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[2] Academy of Science of South Africa (ASSAf), (2021). The status of coding and robotics in South African schools.

[3] Department of Higher Education and Training (2014), The national scarce skills list: top 100 occupations in demand, notice 380 of 2014.

[4] Academy of Science of South Africa (ASSAf), (2021). The status of coding and robotics in South African schools.

[5] http://www.dha.gov.za/index.php/immigration-services/scarce-skills-work-permits

[6] Department of Basic Education (2021). Curriculum and Assessment Policy Statement, Grades R-3, Coding and Robotics

[7] Academy of Science of South Africa (ASSAf), (2021). The status of coding and robotics in South African schools.

- Address digital connectivity, legislation, and framework gaps: Bridging education gaps, such as connectivity and infrastructure in South African schools.
- Introduce 4IR skills: Provide lessons and resources to bring Coding and Robotics into South African education.
- Train and equip teachers: Provide quality training for all teachers to upskill them and create a South Africa-wide teacher community of practice.

Scope of Work

Goal and Objective: Under the general supervision of the Adolescent Development Specialist (Education and Adolescent Development) in close collaboration with the Department of Basic Education (Chief Director of Math, Science & Technology), the appointed service provider will ensure the delivery of coding and robotics programme in South African schools.

1) Activities and Tasks: For the purpose of this assignment the appointed service provider (company/institution) will be expected to deliver the following package of services:

1.1 Procurement and instalation of 300 robotic kits, including 250 computers to deliver the coding programme. The robotic kits should consist of the following: MINDSTORMS education EV3 kits/EV3 software/chargers; SPIKE Prime kits/SPIKE Prime software/chargers; WeDo 2.0 kits/WeDo 2.0 software/chargers; Stratch® 3.0 software; Python software. The laptops should be HP Elitebook 840 3G ultrabook with 8GB Ram.

1.2 Identify safe and secure schools that would serve as a hub in each of the 5 provinces (Limpopo, Mpumalanga, Northwest, Eastern Cape and Northern Cape). Ensure the establishment and set up of an educational robotics hub in 5 provinces using the above mentioned equipments

1.3 Conduct training for 1000 educators on coding and robotics curriculum

1.4 Develop the capacity of national, provincial and district education officials to support the implementation of Scratch® in primary schools and Python in secondary schools

1.5 Implement Scratch® linked to the CAPS in 1000 primary schools and Python in 1000 secondary schools from all nine provinces.

1.6 Conceptualise and present a plan regarding the phasing in of national and provincial education robotics competitions.

1.7 Organising and hosting of two national and eighteen provincial competitions

1.8 Design and implement action research with 750 girls focusing on the implementation of the Girls in STEM programme. Conduct a documentary and produce 10 Human Interest Stories (HIS).

2) Outputs/Deliverables:

2.1 300 robotics kits and 250 computers procured
2.2 5 robotics hubs established
2.3 1000 educators trained on coding and robotics
2.4 1000 primary schools implementing Scratch®
2.5 1000 seonday schools implementing Python
2.6 A national plan for the roll out of robotics competition is developed and implemented
2.7 200 officials trained on the implementation of Scratch® and Python
2.8 Two national events and 18 provincial events hosted
2.9 Action research conducted and 10 Human Interest Stories produced

Deliverables	**Duration (#of days)**
300 robotics kits and 250 computers procured	10 days
5 robotics hubs established	15 days
1000 educators trained on coding and robotics	30 days
1000 primary schools implementing Scratch®	40 days
1000 seconday schools implementing Python	40 days
A national plan, developed and implemented, for the roll out of robotics competition	5 days
200 officials trained on the implementation of Scratch® and Python	15 days
Two national events and 18 provincial events hosted	20 days
Action research conducted and 10 Human Interest Stories produced	30 days
Total	**205 days**

Required Travel:

Purpose	**Location**	**# of days at Location**
Provincial consultation with government officials	All nine provinces	15 days
Training of educators	All nine provinces	15 days
Training of national, provincial and district officials	All nine provinces	15 days
Hosting of provincial competitions	All nine provinces	15 days
Conducting the action research	All nine provinces	15 days

6. Payment Schedule

It is expected that this assignment will be implemented over an eighteen month period. The payment will be made on based on the following guidance:

- 30% upon submission of detailed work plan, inception report
- 20% upon submission of the report and evidance indicating the reach of 50% educators through coding and robotics training
- 20% upon presentation of a detailed report demostrating improved knowledge and skills of 50% learners using Scratch® and Python
- 10% upon delivery of 300 robotics kits and 250 computers
- 10% upon presentation of evidance that 50% of the provincial competitions have been held
- 10% upon submission of a detailed report showing evidance that all the deliverables including the report of the action research have been successfully completed

Each expected deliverable will be signed off by the the Chief of Education and Adolescent Development in UNICEF upon submission of an invoice in line with the deliverables.

7. Desired competencies, technical background, and experience

The organisation must have a team of experts with 8 years of experience in working with both local and international agencies in education, youth, and adolescent development with specialisation in the implementation of Fourth Industrial Revolution (4IR) technologies. Additionally, the organisation's team of experts must possess the following:

- Advanced University Degree in Education, Social Sciences or related studies or the equivalent in experience.
- Eight year experience in capacity development, research, education and curriculum development and implementation.
- Proven knowledge and understanding of monitoring and evaluation systems,
- Good experience in coding and robotics including hosting of heckathon is a key requirement.
- Experience in facilitating large diverse groups in an educational setting coupled with some understanding of the education sector.
- Excellent writing skills and good and writing skills in the English language.
- Proven ability to deliver product efficiently and on time.
- Proven experience to work independently with periodic but not constant supervision.
- Experience in project management and a track record of delivering quality product under very tight timeframes.
- Experience in community development work all of which would have involved schools and families.

8. Administrative issues

Management

- The contract will be managed by UNICEF.
- The institutional contractor shall have regular consultations with UNICEF in close collaboration with DBE as needed, either in person or telephonically. These consultations may bring about slight deviations in agreements and the work assignment. This includes an inception discussion to ensure that aspects of the work assignment are understood clearly.
- Face to face meetings will be at times to discuss and agree upon matters pertinent to the implementation of this assignment.
- UNICEF in close collaboration with DBE are responsible for the monitoring of the implementation of this assignment and shall execute this in a professional and consultative manner throughout the term of the contract.

Important Conditions

9. Ethical and Technical Requirements

9.1. The institutional contractor shall undertake to adhere to the following:

(a) The consultant/individual contractor shall at all times keep information obtained during the work assignment confidential and shall not circulate the documents or any part there-of, at any stage to any party without the explicit written permission of both UNICEF.

(b) The institutional contractor shall not publish the document, any part thereof, or any reworked version thereof, without the explicit written permission of UNICEF under such conditions that both parties will agree too.

9.2. UNICEF reserves the right to subject any work done for external peer review as part of the quality assurance process in the implementation of this assignment. The institutional contractor shall be informed if such an action is taken and will be duly informed on the outcome there-off.

9.3 The institutional contractor will provide all products that were developed in accessible formats, e.g. MsWord, MsExcel and PowerPoint formats. Graphics presented in any written work, shall be provided in an accessible format. All information raw informaiton and data will be handed over electronically, or if not available electronically, in hard copy.

9.4 **Referencing and Plagiarism**

a) All sources consulted and used for the execution of this assignment shall be appropriately referenced in accordance with generally accepted referencing techniques. This applies to draft as well as final deliverables.
b) Referencing must follow one style and be applied consistently throughout all documents (including drafts).

c) Referencing in the text (either in the body of the text or as footnotes) and the bibliography shall correspond and be done in a consistent manner.
d) UNICEF regards plagiarism in a serious light, for both ethical reasons and risk of reputation of the organisation and its partners.
e) The institutional contractor shall certified that a deliverable is original work.
f) In the case of plagiarism, UNICEF will employ such sanctions and remedies as necessary, which may include the immediate termination of the contractual agreement and related payments.

9.5 **Language:**

a) The institutional contractor shall ensure that all final deliverables adheres to the required language standards, which include a thorough grammar and spell check.
b) The institutional contractor shall ensure consistency in the use of terminology throughout the document.
c) Acronyms and abbreviations shall be recognised acronyms related to the field of work and shall be indicated in specific list of acronyms. It is preferred that no new acronyms be created.
d) A glossary of terms shall be included in the the final docunents that provides a basic descriptions and or definitions of terms used in the deliverable

9.6. Qualified institutional contractors are invited to submit a detailed proposal based on the criteria outlined below, reflecting an understanding of the assignment and capacity to execute the assignment within the required timelines. This needs to be submitted two separate parts, i.e. technical proposal (cover letter) and financial proposal (fee structure). These should be submitted as two separate documents.

9.7 The Cover Letter, which contain the following required technical areas related to assignment (Non-inclusion of any of the below components will lead to disqualification)

9.8 Executive summary (100 words maximum)

9.9 The institutional contractor's understanding of the assignment, (what the institutional contractor thinks the assignment entails). (50 words maximum)

9.10 The proposed approach/methodology that the institutional contractor will follow in executing the assignment, with specific reference to each of the components (400 words maximum).

9.11 An indication of the intended timelines envisaged to complete this assignment (within the timeframe provided in terms of this terms of reference) and an undertaking that the institutional contractor will be able to complete the assignment within the timeframes required.

9.12 References that can be contacted (at least two work related references). Indicate the name of the person, telephone number, email address and short indication of the work that institutional conractor has done.(Two sentences maximum per reference)

9.13 An indication of possible risk factors associated with this assignment, based on the perception and experience of the institutional contractor (80 words maximum)

9.14 Reference to similar work (at least two). Preferably final products that are available and accessible either through email or on website. In case of confidential work, indicate as such.

9.15 Attach the following:

(a) The full Curriculum Vitae indicating all qualifications and experience related to the assignment.

9.16 The Financial Proposal needs to be submitted as a separate document and must include:

- Proposed pricing in accordance with the TOR and in South African Rand.

- Other costs related to the execution of the assignment.

9.17 Please note:

(a) Prices offered shall be all inclusive and shall remain fixed for the duration of the contract.
(b) VAT needs to be indicated separately (i.e. fees/budget needs to exclude VAT).

9.18 Applications submitted without a fee/ rate/budget will not be considered.

General Conditions and Requirements

As per UNICEF DFAM policy, payment is made against approved deliverables. No advance payment is allowed unless in exceptional circumstances against bank guarantee, subject to a maximum of 30 percent of the total contract value in cases where advance purchases, for example for supplies or travel, may be necessary".

The team/firm selected will be governed by and subject to UNICEF's General Terms and Conditions for institutional contracts.
- The service provider is not allowed to use the materials gathered for this assignment in any other work assignment without the explicit written permission of UNICEF.
- The service provider will work on her/his own equipment and use her/his own office resources and materials in the execution of this assignment. The service provider's fee shall be inclusive of all office administrative costs.
- The price proposal shall include travel costs.

Technical Evaluation Criteria and Relative Points

Technical Criteria	Description of Technical Sub-criteria	Maximum Points %
Overall Response	Completeness of response	5
	Overall concord between RFP requirements and proposal	5
Maximum Points		10
Institution & Key Personnel	Range and depth of experience with similar projects	5
	Number of customers, size of projects, number of staff per project	5
	Client references	5
	Key personnel to be assigned: relevant qualifications & experience	5
	Maximum Points	20
Proposed Methodology and Approach	Proposed Methodology for this project	15
	Proposed Work Plan to accomplish the Project	15
	Maximum Points	30
	Total Score for Technical Proposal	60
	Minimum Acceptable Score for Technical Proposal	45

Weights: *Indicate 60 % Technical vs. 40% Financial Offer*