



Conférence des ministres de l'Éducation des  
États et gouvernements de la Francophonie

**Project “P130437 – Francophone sub-Saharan Africa regional network for  
results-based Governance in the education sector”**

**TERMS OF REFERENCE FOR THE RECRUITMENT OF A  
CONSULTANT SPECIALIZED IN ITEM RESPONSE  
THEORY (IRT)**

June 2013

## 1. BACKGROUND

Education for All performance shows that sub-Saharan African countries have made significant progress in expanding access, but are struggling to achieve priority objectives in the areas of quality education. In view of current and future societal challenges, the issue of quality education, especially the transmission of key competencies for success in the academic world and in the longer term for integration into social life, appears as a major challenge to an efficient and equitable support to sub-Saharan African nations for them to cope with current and future economic, social and cultural realities.

To help overcome these challenges, CONFEMEN has decided to redirect the PASEC program towards international evaluations of countries aiming specifically at providing them with relevant and reliable means of measurement of their performance and at enhancing their analysis through the comparison of their policy with those of other countries in « similar » contexts but achieving different results. International comparisons of pupils' achievements over the time will enable countries to measure the evolution of their education systems in relation with initiated reforms and better manage the quality of their education system. This international comparison is essentially focused on the 6th grade of primary education; the test intended to pupils in early grades primarily focuses on the assessment of early learning and aims at providing remediation to pupils' difficulties.

The relevance of pupil's achievements measurement (what competencies should be assessed?), the reliability and validity of measurement tools (how to assess those competencies?) are also essential dimensions to be considered for evaluations tailored to national and international concerns.

PASEC has undertaken a full renovation of its tests. This work is being completed, after a 2-year work cycle initiated by the technical team under the supervision of the Scientific Committee. The analysis of these new PASEC tests will be made through the methodology most commonly used by international reference evaluation programmes, i.e. the Item Response Theory (IRT), instead of the classical Test Theory. This methodology will allow analyzing properly the format chosen for new PASEC tests, which now include many more items with acceptable execution times (rotating booklets). It will also allow for comparisons over time provided that some of the tests (anchor items) are common between different

periods. This requires reflection on tested competency levels and a full standardization of instruments across countries to ensure data reliability and comparability.

As part of the implementation of this 2013-2016 action plan in which the World Bank is actively involved and in relation with 2014 international evaluations, PASEC has established a continuous training policy for technical advisors to ensure its new missions and secure the quality of its outputs. This continuous training policy started in 2012 with the training of two Technical Advisors (TAs) in item response model methodology, on the one hand, and in the analysis of international evaluation data, on the other hand. Three other Technical Advisors have also been trained in learning tests development. PASEC's action plan provides that this training policy will be completed through the World Bank which funding will notably allow capacity building for PASEC team based on identified needs with particular emphasis on the analysis of tests using the Item Response Theory methodology to improve learning measurement. The training of Technical Advisors could include stays in Universities or Research centres and missions of International Consultants, specialized in IRT, in Senegal. The Consultant hired as part of this funding, will train Technical Advisors (both face-to-face and via distance learning) in IRT, prepare modules necessary to the training of national teams, and might be approached as a trainer, to support capacity building workshops for national teams.

As part of this project, PASEC seeks the support of a consultant as of November 2013 to train TAs in IRT and provide them with technical assistance. The duration of the consultancy is 10 days (two consecutive weeks) for the first training in early 2014, and 10 days (two consecutive weeks) for the second training in late 2014. This second phase will coincide with the IRT analysis of international evaluations. A third and final training in IRT will be planned, if necessary, in March 2015 during which the Consultant will also be hired for 10 days (two consecutive weeks).

In addition to the face-to-face capacity building, the Consultant will be hired for distance support to TAs on activities related to IRT analyses. His mission will last two years (between 2014 and 2015) and is estimated at 60 days, i.e. about 3 days per month (the project will end in June 2015). The Consultant will be required to provide PASEC with technical support (manual of procedures) on IRT procedures. For this purpose, 20 working days for the preparation of this manual are planned by the Consultant (outside the 30 days that will be

devoted to the training of TAs in Dakar). It is also possible to hire this consultant to contribute, as a trainer, in the facilitation of PASEC International Workshop (date to be specified later), especially on the measurement of learning outcomes.

## 2. ASSIGNMENTS OF THE CONSULTANT

Duties include:

- Providing training for technical advisors two or three times and for two weeks each. It will consist in theoretical courses and practical sessions on ConQuest (or another software support found to be more suitable). A comprehensive course material should be made available to technical advisors at least one month before starting the training. The training should include, at least, the following points:
  - The development of *Incomplete Test Design* ;
  - One, two and three-parameter models ;
  - Dichotomous or polytomous items models (*rating scale, partial credit, generalized partial credit*) ;
  - One-dimensional or multi-dimensional models ;
  - Estimation methods (advantages/inconveniences) such as *joint maximum likelihood, conditional maximum likelihood, marginal maximum likelihood* ;
  - Point estimations of the competency of the subjects (Maximum Likelihood Estimate, Weighted Maximum Likelihood Estimate) versus the population models with plausible values and conditioning variables;
  - The conditioning variables preparation;
  - The differential items functioning (DIF), including the Item by Country Interaction ;
  - The national and international item calibration ;
  - Anchor-based methods (joint calibration, equating ...)

- Supporting the technical advisors, IRT specialists, in the finalization of the international evaluations of the CONFEMEN Program for the Analysis of Education Systems (PASEC).

The PASEC team will interact if need be with the hired consultant to more specifically define the training contents as well as the support.

### **3. EXPECTED RESULTS**

The following results are expected from the work of the consultant:

- The technical advisors, IRT specialists, are able to implement some item response models, following the methodology used within the framework of the OECD/PISA and IEA/TIMSS PIRLS studies.
- The consultant has provided a support to PASEC in the finalization of the test analysis resulting from the first PASEC international evaluation;
- A comprehensive training manual dealing with, among others, Item response models and the plausible values methodology is made available to PASEC.

### **4. CONSULTANT PROFILE**

The consultant shall demonstrate a very good knowledge of item response models (minimum 5 years of higher education, preferably PhD) as well as a very good knowledge and experience in analysis methods of Large Scale Assessment (LSA).

The Consultant shall have an experience of at least ten (10) years in the use of item response models for the assessment of pupils' achievements. Knowledge of education systems in French-speaking African countries is an asset.

### **5. APPLICATION FILE**

A call for tenders is published on the CONFEMEN's website, on DG Market and forwarded to specialized agencies. **Consultants interested in this project are required to submit their detailed curriculum vitae (CV).**

The selection of the Consultant will be based on the comparison of CVs received. Three criteria will be used in the selection process : academic training (20 points); specific experience in training (70 points) and assets (10 points).

The selected Consultant will be contacted to submit a technical and financial offer. The technical offer will include:

- a summary note showing his understanding of the project ;
- a detailed outline of the training manual ;
- some indications on his remote intervention modes ;
- and the timeline for activities (in consultation with the PASEC team).

The financial offer will provide in a separate paper the detailed budget for the implementation of the various interventions with unit costs.

## **6. DEADLINE FOR SUBMISSION**

The CVs should be sent to the CONFEMEN Permanent Technical Secretariat no later than September 30, 2013, in electronic format at the following addresses: [confemen@confemen.org](mailto:confemen@confemen.org) / [andiaye@confemen.org](mailto:andiaye@confemen.org) / [jmalpel@confemen.org](mailto:jmalpel@confemen.org).

An electronic acknowledgment of receipt will be sent to all applicants having submitted their application before the deadline, and this, at the latest within seven (07) days after the file receipt. Applicants who would not receive an acknowledgment should contact the Permanent Technical Secretariat as soon as possible at addresses listed above.

## **7. CONSULTATION TIMEFRAME**

Works within the framework of this consultation will start on November 1, 2013 and will be completed in June 2015.