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Programme d'analyse des systèmes
éducatifs de la confemen

**TERMS OF REFERENCE FOR THE RECRUITMENT
OF IRT SPECIALIST CONSULTANT FOR
PSYCHOMETRIC ANALYSIS OF PASEC2019
ASSESSMENT**

December 2019

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1. CONTEXT

As part of the second PASEC international assessment called "PASEC2019", data were collected in fourteen (14) countries (Benin, Burkina Faso, Burundi, Cameroon, Congo, Ivory Coast, Gabon, Guinea, Madagascar, Niger, Democratic Republic of Congo, Senegal, Chad and Togo) between April and June 2019. The major change between the first PASEC2014 assessment and the current one is about the data collection on disciplinary and didactic skills of teachers.

Data were coded and entered following a technical protocol accordingly to PASEC methodology, in all countries and transmitted to CONFEMEN. These databases are being cleaned and will be statistically and econometrically analyzed for the production of the international and national reports. Such tests require a prior psychometric analysis that will be performed in order to estimate performance scores and proficiency scales in the evaluated subjects (math, reading), and also aggregated index on the context.

In order to follow the evolution of the performance of education systems, items on the PASEC2014 assessment student tests were included in the PASEC2019 assessment tests to ensure anchoring and thus bring the results of PASEC2019 to the PASEC2014 scales, allowing the calculation of trend indicators.

This TDR is designed to recruit a consultant or firm to support the scaling of cognitive data of students and teachers.

2. MANDATE OF THE CONSULTANT

To achieve the mission, the Consultant will take over the general framework of the evaluation (design tests including specification tables, administration of tests, collected data architecture). To this end, a collaboration between the consultant and PASEC will be implemented from the start of the mission.

Based on the above, the consultant's mandate is described as follows:

- Perform all psychometric analyzes according to the procedures of item response models (IRT): from the analysis step of items per booklet, by

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country, to step in estimating scores of students / teachers by an IRT model logistics to a parameter and two-dimensional (understanding written and mathematics). Furthermore, variables called contextual collected through questionnaires should be used as conditioning variables in the population model. The Consultant shall comply with the methodology used in the IRT analysis PASEC2014 evaluation. To do this, it will be made available to the consultant's technical report on the IRT analysis PASEC2014 evaluation. Any change in procedure will be discussed with the PASEC. In addition,

- The national and international calibration required the final selection of items for the estimation of scores. Differential operating analyzes by country should also be carried out. To this end, the detailed results of the analyzes must be provided to PASEC.
- ○ Estimation of plausible values for student scores, based on the two-dimensional one-parameter model with conditioning variables such as type of booklet, type of student, type of school (public, private, etc.), the location of the school (urban / rural). Other categorical variables from the Student questionnaire used in principal component analysis will serve as indirect conditioning variables. To this end, the consultant must use the technical report of the psychometric analysis carried out during the PASEC2014 evaluation.
- The estimation of plausible values for teachers of scores based on the multidimensional model to a parameter. The conditioning variables to be used will be discussed with PASEC.
- Send to PASEC all developed analysis programs, as well as all Outputs from these analyzes. The list of programs and Outputs to be transmitted is shown in the appendix.
- Prepare a detailed technical report which will serve as the basis for the part relating to psychometric analyzes in the technical report of the PASEC2019 assessment.

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All analyzes conducted by the consultant must be made in cooperation with PASEC. To this end, face-to-face and remote exchanges will be organized.

3. EXPECTED RESULTS

The following results are expected from the consultant:

- All psychometric analyzes of cognitive tests (students and teachers) of PASEC2019 assessment are performed according to the aforementioned IRT model;
- Plausible values are estimated for all students in the international database;
- Plausible values are estimated for all teachers;
- The files (in Excel format) containing national and international calibrated scores are transmitted;
- The international database of the beginning of primary school students including the estimation of scores under SPSS format is transmitted;
- The international database of end of primary school students including the estimation of scores under SPSS format is transmitted;
- The international database of teachers including the estimation of scores under SPSS format is transmitted;
- The consultant attended a French-language workshop on competence scales and the distribution of students in the scales of coherence skills with defined scales for PASEC2014 evaluation. The venue of the workshop will be defined at the appropriate time;
- All developed analysis programs are transmitted PASEC, and all analyzes Outputs from these programs.
- A detailed report of psychometric analyzes of the tests is sent to PASEC.

4. CONSULTANT PROFILE

The Consultant must have a minimum level equivalent to Masters (BAC + 5).

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It must have very good knowledge of item response models and also a very good knowledge and experience in the methodology of international assessments test analysis.

The Consultant must demonstrate experience of at least ten (10) years in the use of response models to the item in large-scale assessments. The knowledge of the methodology PASEC and education systems Francophone African countries is an asset.

5. WORKING MODALITIES

The following items will be made available to the Consultant:

- Databases (students, teachers and directors) of the 14 countries in SPSS format.
- Excel files containing the information on the coding of items and anchor items with PASEC2014 assessment;

The table below shows the countries with an accuracy on the test language.

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Countries	primer beginning (test and Questionnaire)	End of primary (test and Questionnaire)	Teacher (test and Questionnaire)	Director (questionnaire)
Benin	French	French	French	French
Burkina Faso	French	French	French	French
Burundi	Kirundi	French	French	French
Cameroon	French	French	French	French
Cameroon	English	English	English	English
Congo	French	French	French	French
DR Congo	French	French	French	French
Cote d'Ivoire	French	French	French	French
Gabon	French	French	French	French
Guinea	French	French	French	French
Madagascar	Malagasy	French	French	French
Niger	French	French	French	French
Niger	Hausa		French	
Niger	Zerma		French	
Senegal	French	French	French	French
Chad	French	French	French	French
Chad		Arab	Arab	Arab
Togo	French	French	French	French

6. APPLICATION FORM

All candidates have to express their interest in this call for applications, and submit a file including technical and financial proposal.

The technical offer will include:

- a synthetic note of understanding of the TOR;
- a methodological approach including the detailed plan of the workflow;
- the curriculum vitae (CV) of the members of the consultant team together with their relevant experiences;
- dating proposals with the PASEC team (before, during and at the end of the mission);
- a calendar of all activities with deliverables.

The financial offer must be separated from the technical offer, the budget should be detailed and will include the unit costs.

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7. SUBMISSION DEADLINE

The technical and financial proposals of the Consultant must be sent to CONFEMEN no later than January 24, 2020 at 12am GMT.

These offers will be addressed separately in two clearly marked envelopes.

Submissions should be addressed to the Permanent Technical Secretariat of CONFEMEN, E-Point Avenue Cheikh Anta Diop SICAP-Complex-Building C 3rd floor-BP 3220 Dakar Senegal Tel +221 33 859 29 79.

8. CALENDAR OF CONSULTATION

The consultation will start on February 15, 2020 and will end on April 30, 2020.

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Attachments

Listing¹ transmitting programs PASEC

- Program Analysis of items per booklet and country;
- Questionnaires Analysis Program by country and all countries;
- Program item analysis of all booklets and country: indeed booklet
- item analysis of all program booklets and country: DIF analysis
- Program of differentiated analyzes;
- Program analysis combined all books and items by country: estimation of item parameters
- item analysis program: international calibration items
- multidimensional scores estimation programs (WLE versus PVs)

List of Outputs to transmit PASEC

- Scan results by book and country;
- Scan results by all countries combined booklets;
 - o Scan results on "book effect"
 - o Results DIF analyzes (gender, public / private, urban / rural, etc.) by country
 - o Results distractor analysis at country level
 - o Results of the estimation analysis of items parameters in country
- analyzes the results of items internationally
 - o Results of calibration items: final estimation of item parameters;
 - o Results of multivariate estimation scores

¹This list is not necessarily exhaustive. Any other document useful for understanding analyzes interested PASEC.

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