



African Institute for Mathematical Sciences Schools Enrichment Centre

6 Melrose Road, Muizenberg, 7945, RSA
Tel: +27(0)21 7879326 Fax: +27(0)86 2631268
<http://aimssec.aims.ac.za>

Research Assistant

The African Institute for Mathematical Sciences Schools Enrichment Centre (AIMSSEC), in Muizenberg, is looking for a Research Assistant (RA) for the European Commission research project FP7-SCIENCE-IN-SOCIETY-2013-1.

Project Title: Improving progress for lower achievers through Formative Assessment in Science and Mathematics Education (FaSMEd).

Abstract: This three year international project involving AIMSSEC and eight European partners aims to research the use of technology in formative assessment classroom practices in ways that allow teachers to respond to the emerging needs of low achieving learners in mathematics and science so that they are better motivated in their learning of these important subjects. The project will adapt and develop existing research-informed pedagogical interventions (developed by the partners), suited to implementation at scale, for working with low attaining pupils and transforming teaching.

Duties: For AIMSSEC as participant in this project the description of work for our RA is to assist the Principal Investigator (PI) with the seven work packages: Project design; Landscape collection of data and review of literature and systemic practices; Design and production of toolkit for teaching and assessment; Intervention cases; Cross comparison analysis of historical and intervention cases; Final synthesis – policy recommendations – identified future research needs; Exploitation and Dissemination. Please see the attached document: “Job description for Research Assistant” for more detail.

Requirements: A Master’s Degree in Mathematics Education with the following essential skills: well-developed computer skills; excellent interpersonal, oral and communication skills; language skills (English plus Xhosa or Afrikaans); planning and organising skills; classroom experience in mathematics teaching (preferably in South Africa).

Knowledge of at least one of the following is essential: formative assessment, use of tools/technology in the teaching and learning of mathematics, experience in professional development for teachers of mathematics.

The incumbent should be passionate about mathematics and about improving educational opportunities for underprivileged learners. He/she must have energy; flexibility and willingness to go the extra mile to achieve project goals.

The incumbent must be in possession of a valid unendorsed drivers’ license. Applicants for positions in South Africa must have a valid South African work permit or be a permanent resident.

Recommendations: Experience in working with provincial government or their districts and familiarity with a university environment.

Commencement of duties: The post is a full-time contract position with start date 1 July 2014 (or as soon as possible) until 30 June 2016. We would prefer a full-time candidate for



African Institute for Mathematical Sciences Schools Enrichment Centre

6 Melrose Road, Muizenberg, 7945, RSA
Tel: +27(0)21 7879326 Fax: +27(0)86 2631268
<http://aimssec.aims.ac.za>

the position, but we are open to negotiate a part-time arrangement (i.e. a minimum of 3 days a week).

Closing date: 11 April 2014.

Enquiries: Dr Barrie Barnard, AIMSSEC Academic Manager, tel. 021-7879326 or barrie@aims.ac.za

For more information, visit <http://aimssec.aims.ac.za> or www.aims.ac.za

Prospective candidates must submit a detailed CV, together with the names of at least three referees and a covering letter motivating their application to: The Academic Manager, AIMSSEC, 6 Melrose Road, Muizenberg, 7945, or electronically to aimssecpost@aims.ac.za.

Only short-listed candidates will be contacted for interviews on 23 April 2014.

AIMSSEC reserves the right not to make an appointment at its sole discretion.



African Institute for Mathematical Sciences Schools Enrichment Centre

6 Melrose Road, Muizenberg, 7945, RSA
Tel: +27(0)21 7879326 Fax: +27(0)86 2631268
<http://aimssec.aims.ac.za>

Job description for Research Assistant (RA) for the European Commission project Call: FP7-SCIENCE-IN-SOCIETY-2013-1

Project Title: Improving progress for lower achievers through Formative Assessment in Science and Mathematics Education (FaSMEd)

Abstract:

This three year international project, involving AIMSSEC and eight European partners, aims to research the use of technology in formative assessment classroom practices in ways that allow teachers to respond to the emerging needs of low achieving learners in mathematics and science so that they are better motivated in their learning of these important subjects. The project will adapt and develop existing research-informed pedagogical interventions (developed by the partners), suited to implementation at scale, for working with low attaining pupils and transforming teaching. The project will seek to: report the differences in the way that systemic structures influence the trajectories of lower achieving students within the eight participating countries; identify their typical pathways through the school system and reveal the educational opportunities that are open to these students. It will report on the varying assessment tools that are used to identify lower achieving students and may determine these pathways, with attention paid to the different interpretations of low achievement in each country. This project aims to: • foster high quality interactions in international classrooms that are instrumental in raising achievement for low achievers; • expand our knowledge of technologically enhanced teaching and assessment methods addressing low achievement in mathematics and science. Major objectives for the project are to: • offer approaches for the use of new technologies to support the formative assessment of lower achieving students; • develop sustainable teaching practices that improve attainment in M&S for the targeted students; • produce a toolkit for teachers to support the development of practice and a professional development resource to support it; • disseminate the outcomes.

For AIMSSEC as participant in this project the **description of work for our RA** is to assist the Principal Investigator (PI) with the following 7 work packages:

Work package 1: Project design

Help to set out the strategy for the project by drawing on exemplars of effective interventions which have transformed teaching practices and raised student achievement. This could include:

- 1.1 Map out the stages of the design study and evaluation process;
- 1.2 Update a glossary of terminology used within the project, translated into the required languages;
- 1.3 Develop a set of research protocols to support the collection of data at each stage of the study;



African Institute for Mathematical Sciences Schools Enrichment Centre

6 Melrose Road, Muizenberg, 7945, RSA
Tel: +27(0)21 7879326 Fax: +27(0)86 2631268
<http://aimssec.aims.ac.za>

- 1.4 Develop school selection criteria for schools, teachers and students;
- 1.5 Design a professional development strategy.

Work package 2: Landscape collection of data and review of literature and systemic practices

Partners will identify the range of tools and technology available to support teaching and assessment in mathematics and science.

- 2.1 Collection of comparative data on the landscape for low achievers in mathematics in the partner countries including South Africa.
 - 2.1.1 Identification of 'low achievers'
 - 2.1.2 Typical trajectory
 - 2.1.3 Typical outcomes (attainment, future path)
 - 2.2 EU wide survey of systemic practices in respect of low achievers in mathematics.
 - 2.3 Research on use of tools and technology to support teaching and assessment
- Begin negotiations with Western Cape Education Department and district/metropole

Work package 3: Design and production of toolkit for teaching and assessment

The work will be split into mathematics and science. AIMSSEC will only concentrate on mathematics. The development of the toolkit will be informed by WP1 and WP2. This WP could involve the majority of partners as either major or secondary contributors. AIMSSEC will be a secondary contributor to this work package and help to:

- 3.1 Develop a prototype toolkit for teachers to support their use of formative assessment in the classroom including advice and support in using technology;
- 3.2 Evaluation of the prototype toolkit;
- 3.3 Develop the final toolkit
 - 3.3.1 Case studies;
 - 3.3.2 Begin negotiations with schools.

Work package 4: Intervention cases

This work package is the focus for intervention with teachers and students to implement the toolkit of approaches designed in WP3. There will be feedback into WP3 through cluster meetings to develop and adapt the resources to meet local contexts as the project develops in year 2.

All partners will have a cluster of about three schools to implement each of the approaches – depending on the focus of the partner and their chosen schools – for example there could be three schools working on secondary mathematics.

- 4.1 Manage local cluster meetings (local groups of schools and HOD's to share practice and progress). Each partner will be interacting with their local group of teachers and students;
- 4.2 Arrange classroom visits for higher education institute partners and evaluator(s);
- 4.3 Develop case studies to feed into WP5 and feedback to WP3 about impact of toolkit and provide on-line support to teachers.



African Institute for Mathematical Sciences Schools Enrichment Centre

6 Melrose Road, Muizenberg, 7945, RSA
Tel: +27(0)21 7879326 Fax: +27(0)86 2631268
<http://aimssec.aims.ac.za>

Work package 5: Cross comparison analysis of historical and intervention cases

This work package will draw on the results and findings emerging from WP2, WP3 and WP4. Although the reports produced in these WPs will be mainly based on the case studies, they will also include references to the state-of-the-art, theoretical debates, and practical experiences taking place elsewhere.

5.1 Methodology: The WP leaders (WPL) will propose a common methodological approach for the analysis drawing upon the WP1 findings. All WP participants will comment on the adequacy of this cross-comparative methodology for their particular cases. The methodology will be discussed with key members of the stakeholder groups to ensure a transdisciplinary perspective in the analysis.

5.2 Case studies: WP participants will produce the inputs from their case studies. The WPL will circulate a first draft of the integrated cross comparative analysis to be commented by the participants including the stakeholders. This will take the form of an electronic conference organised by the WPL.

5.3 Country studies within their context: In each country the partners will produce an analysis framing the results from FaSMEd within the policy and practice of the country. The WPL and University of Newcastle (UNEW) will produce the final comparison of the experiences.

Work package 6: Final synthesis – policy recommendations – identified future research needs

This work package will build on the results provided by the research activities conducted in the previous phases of the project. It will focus on identifying the conditions and requirements for promoting sustainable, appropriate and innovative socio-technical approaches to the raising of achievement in mathematics, science and technology education.

This work package will also draw lessons and develop scenarios and policy options to support the relevant policy-making process in the identification and execution of appropriate educational interventions in raising achievement in mathematics, science and technology education. Given the scope of our case studies, we expect that these recommendations would be applicable to other socio-cultural and economic contexts not just in the EU and South Africa but also across the developing world.

Lastly, based on the experiences gained through the research activities, this work package will identify needs and opportunities for further research. This WP will be led by UNEW with active input from all other partners.

Work package 7: Exploitation and Dissemination

7.1. Attend the launch event in year 1.

7.2. Attend stakeholder meetings in y1, y2 and y3. Host meeting with participants in Cape Town.

7.3. Participate on website (with a commitment to maintenance for 2 years after the end of the project).

7.4. Maintain a steady flow of stories related to the project to maintain the profile amongst target audiences and among the participants through newsletters.



African Institute for Mathematical Sciences Schools Enrichment Centre

6 Melrose Road, Muizenberg, 7945, RSA
Tel: +27(0)21 7879326 Fax: +27(0)86 2631268
<http://aimssec.aims.ac.za>

- 7.5. Dissemination of outcomes of other work packages through briefing documents and participation in conferences.
- 7.6. Write papers for peer reviewed journals about the specifically South African research involved and contribute to joint papers disseminating the research. Disseminate research to the SA National Government and across South Africa.
- 7.7. Liaise with sub-contractor for documentary on participants in the project
- 7.8. Produce publicity material for specific audiences of policy makers and other target groups.
- 7.9. Plan for major participation in international conferences in y3.
