

# Using Collaborative Action Research (CAR) to Investigate Mathematics Teachers' Practices in Implementing Learner Centred Pedagogy with ICT as Tool for Learning

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## Rationale and background

- Rwanda is putting efforts in place at policy and implementation levels to develop a robust education system characterized by provision of holistic educational benefits to its citizens.
- Learner centred teaching was revealed to enhance effective learning.
- Research in developing countries (Rwanda included) reveals that teaching still remains teacher orientated.
- Technologies are being used to help teachers shift to a more learner orientated teaching style.

## Aim and research questions

To investigate the role of CAR in supporting mathematics teachers in implementing learner centered pedagogy using ICT as a tool for learning.

RQ1: How do I, as a mathematics educator and researcher, contribute to empowering participant teachers to develop and implement new teaching skills in their classes?

RQ2: what kind of interactions emerge from maths classrooms within the CAR?

RQ3: How do teachers reflect on their teaching with respect to shifting towards a more learner centered pedagogy?

RQ4: What are the implications of this study for professional development?

## Emerging Findings at a glance

- Teachers are eager to change the culture of 'talk and chalk' and give more opportunities for learners to think subjects through for themselves.
- Working on mathematical activity within an ICT environment enhances classroom interaction.
- Observing a colleague teaching provides teachers with a moment of reflection on learners' learning.



"While my colleague was teaching I followed what learners were doing and I saw how they were interested and working out what the teacher was telling them"

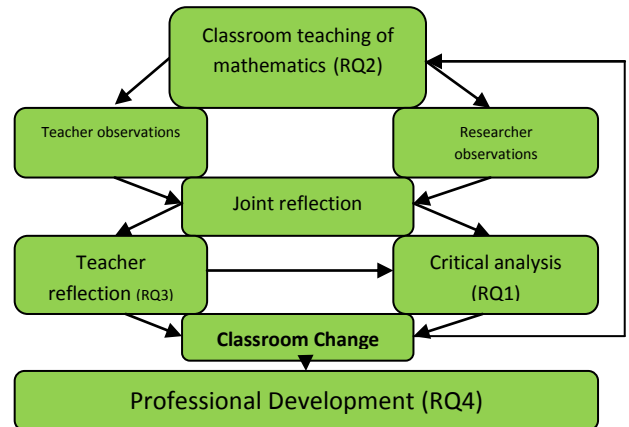
## Research Design

The research for the thesis was conducted under the EdQual umbrella (ICT & ICC projects).



- Data leading to this thesis was collected from one EdQual partner school in Rwanda (learners aged 12-15) during June 2007-February 2010.

- The research design was guided by a Collaborative Action Research methodology.



## Practice and Policy implications

Through learner-teacher interactions, teachers reflect on learners' understanding and adjust their teaching accordingly.

ICT can be used to enhance classroom interactions.

The role of teachers should not be limited to implementing the curriculum; they should be elaborating it.

Teachers within or between schools should be encouraged to sit together and discuss their teaching in order to learn from each other's experience.



## Lessons learnt

Coming from a pure mathematics background, I have learnt much about:

- design and implementation of research in education.
- collaboration with co-researchers and supervisors.

During my studies, I have kept working at KIE as a mathematics lecturer, often acting as an institutional coordinator for EdQual.

My plans, after completing this programme include using skills acquired in the implementation of the KIE mission to train pre- and in-service secondary school teachers, particularly in the use of ICT in teaching mathematics. I am interested in documenting this process and making findings available to a large and varied audience.



## Publications

Uworwabayeho, A. (2009) Teachers' innovative change within countrywide reform: a case study in Rwanda. *Journal of Mathematics Teacher Education* 12 (5):315-324

Uworwabayeho, A., Rubagiza, J., Were, E., & Sutherland, R. (2009). Case Study: ICT and Education in Rwanda. In Tim Unwin (ed.) *ICT4D: Information and Communication Technology for Development*. Cambridge: Cambridge University Press. pp. 228-229.

Uworwabayeho, A. (2007). Innovative Responses to the Vision 2020 national objectives in the new Mathematics Curriculum in Rwanda. *Conference paper* presented at the 2<sup>nd</sup> AFRICME2 held in Nairobi, Kenya.

Co-author of Equal WP6: Implementing Curriculum Change: Literature Reviews; South Africa, Rwanda and Pakistan.