

# Dr Hannah (Hayley) Elizabeth Barnes

## PROFILE

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Languages spoken:	English and Afrikaans (Fluent), Northern Sotho and French (conversational)
Residences:	Hoedspruit and Pretoria, South Africa
Academic qualifications:	PhD in Education (mathematics education, University of Pretoria, 2010)  Masters in Education (Curriculum development in mathematics education, University of Pretoria, 2006, Cum Laude)  Higher Education Diploma in Education (Senior and Further Education and Training Phase, University of Pretoria, 1993 with mathematics, French and Northern Sotho school practicals)  Bachelor of Arts (Majors in Psychology and Northern Sotho, sub-majors French and mathematics, University of Pretoria, 1993)  Adult Basic Education and Training (ABET) qualification (UNISA, 2000)

## PERSONAL STATEMENT

I am passionate about teaching mathematics to teachers and learners across all phases. In this, while I am pragmatic to some extent about what works, most of my teaching and training is underpinned by the theory of constructivism. I believe that in the learning of mathematics it is more important to understand the principles and master notation and terminology than it is to find short cuts and memorise lots of facts or methods.

I love developing various content in both mathematics and environmental education and facilitating workshops rather than a traditional type lecture approach. My career trajectory began as a teacher of mathematics and French before moving on to become a lecturer and later an independent consultant. During this time I have also been on the author panel of a mathematics textbook (Classroom Mathematics), written a level 3 adult education book in mathematics (Maths Matters) and published in some local journals as well a chapter in an academic book on educational change. I have experience in evaluation and assessment in mathematics projects coupled with report writing and project management. My most recent experience over the last few years has involved working in very rural areas training mathematics teachers in the Foundation, Intermediate and Senior Phases and facilitating workshops for learners in the Further Education and Training phase.

## EXPERIENCE

### EDUCATIONAL CONSULTANT, UKUQONDA INSTITUTE, PRETORIA AND NORTH WEST – 2018-PRESENT

I joined Ukuqonda to assist them on a big mathematics baseline study they conducted on 15 000 learners in the North West province with a view to establishing a baseline of performance and identifying the most effective trajectory of training to follow with mathematics teachers in this area. During this time I was part of designing the baseline instruments for Grades R - 7, collecting, analysing and interpreting quantitative and qualitative data and report writing. I also assisted on the design of the subsequent intervention for Grade R - 7 teachers before the project was cancelled due to all funding being withdrawn and re-directed to the pandemic. I still assist where necessary on an advisory or consultancy basis.

#### **EDUCATIONAL CONSULTANT, ECOCHILDREN, BOHLABELA DISTRICT – 2016 - 2019**

I started off teaching some of the EcoChildren bursary students extra mathematics and this evolved into another funding opportunity for training Intermediate and Senior Phase mathematics teachers from the schools of a few circuits in the Bohlabela District in Mpumalanga. Later we extended these workshops to include Foundation Phase teachers. I also ran a few weekend camps for the teachers where I facilitated mathematics workshops in a conservation context. This enabled them to go on game drives and learn more about the environment. Finally we conducted annual baseline assessments on Grade 4 - 6 learners from some of the schools we were working in as part of tracking the progress of the teachers I was training. I designed the assessment instruments and did the qualitative and quantitative analysis and interpretation and produced the final report each year.

#### **EDUCATIONAL CONSULTANT, VARIOUS, ZAMBIA, PRETORIA, HOEDSPRUIT – 2010 - PRESENT**

During this period I was able to carry out community projects on a volunteer basis in Zambia during 2010, 2011 and 2013 in environmental education. I was also self-employed as an independent educational consultant and worked on a variety of different projects including (but not limited to):

- Developing content for projects such as Mindset learning channel, South African National Tutor Service (SANTS), UNISA and Praekelt Foundation.
- Facilitating workshops training teachers across all phases for NGO's and schools such as EcoChildren, Joint Education Trust (JET), Southern African Wildlife College and White River Primary school.
- Assisting on research projects for the Centre for Evaluation and Assessment (University of Pretoria), EcoChildren and Ukuqonda Institute. This also included report writing.
- Working directly with school learners in:
  - conducting evaluations of learners' mathematics struggles in order to map out a possible plan of action to help learners improve.
  - teaching extra mathematics to individual learners as well as groups of learners in Grades 8 - 12.

#### **LECTURER, UNIVERSITY OF PRETORIA, PRETORIA – 2002 - 2010**

During this period I ran the mathematics education component of the Post Graduate Certificate in Education (PGCE) and taught on various courses of mathematics, mathematics education and assessment. I completed my Masters degree which was a mixed methods study using the theory of Realistic Mathematics Education to work with Grade 8 learners who were assigned to a "remedial" class at a local high school. My PhD followed and this was a qualitative study that examined the teaching practice of PGCE students in relation to their mathematics profiles (made up of their content knowledge, pedagogical content knowledge, beliefs about mathematics and perceptions about the teaching and learning of mathematics). I developed and lectured on the Classroom Assessment component of the Masters in Education in Assessment and was part of a number of research projects in the Centre for Evaluation and Assessment led by Professor Sarah Howie. I also acted in the capacity of supervisor and co-supervisor for Masters and PhD students.

#### **HEAD OF MATHEMATICS DEPARTMENT, CORNWALL HILL COLLEGE, PRETORIA – 2001**

Before joining the University of Pretoria as a lecturer I spent one year as the Head of the mathematics department (high school) for Cornwall Hill College. This enabled me to gain invaluable managerial experience.

#### **TEACHER, PRETORIA HIGH SCHOOL FOR GIRLS, PRETORIA – 1994 - 2000**

This was my first official appointment as a mathematics teacher and I taught across all Grades 8 - 12. During these years as a teacher I also wrote the level 3 "Maths Matters" course for Project Literacy's adult education

course and was part of the Classroom Mathematics panel of authors, led by Professor Paul Laridon, for the Grade 8 - 11 textbooks.

### **SELECTION OF PUBLICATIONS**

- Barnes, H.E. (2010). Pre-service teachers' mathematics profiles and the influence thereof on their instructional behaviours. *PhD thesis, University of Pretoria*. <https://repository.up.ac.za/handle/2263/24264>
- Barnes, H.E. & Venter, E. (2008). Mathematics as a Social Construct: Teaching mathematics in context. *Pythagoras*. .
- Barnes, H.E. (2008). Fundamental change in mathematics education: An analysis of teachers' classroom practice and conception of their discipline. In E. Weber (Ed.), *Educational change in South Africa: Reflections on local realities, practices and reforms*.
- Barnes, H.E. (2005). The Theory of Realistic Mathematics Education as a theoretical framework for teaching low attainers in mathematics. *Pythagoras journal*.
- Barnes, H.E. (2004). A developmental case study: implementing the theory of realistic mathematics education with low attainers. *MEd dissertation, University of Pretoria*. <https://repository.up.ac.za/handle/2263/30059>
- Barnes, H.E. (2004). Realistic Mathematics Education: Eliciting alternative mathematical conceptions of learners. *Southern African Journal of Mathematics, Science and Technology Education*.

### **SKILLS**

- Analytical problem solving
- Content development (written text, video media, powerpoint/keynote presentations, assessments)
- Computer skills: proficient in Word, Excel and Power point on Microsoft as well as Pages and Keynote on Mac
- Proficient on iMovie and Final Cut Pro (video software) and learning Photoshop
- Project management and report writing
- Conceptualising and executing research design projects in mixed methods or qualitative research
- Teaching and training in mathematics and facilitating workshops
- Examples of electronic copies of recent reports, content development and presentations available on request.

### **REFERENCES**

Professor Piet Human, Ukuqonda Institute, +27832840129, [humanp@yebo.co.za](mailto:humanp@yebo.co.za)

Corné Havenga, Eco Children, +27827138778, [corne@ecochildren.co.za](mailto:corne@ecochildren.co.za)

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