

EduBrief | December 2018



Professorial Inauguration: UJ's Prof Caroline Long urges teachers to rethink mathematics education

Professorial Inaugural address:
Caroline Long

Reform Mathematics Education over the past 50 years has brought the human and creative element into the learning and teaching of mathematics, has privileged the experience that children bring with them from their out-of-school environments, and sought to develop their mathematical thinking.

According to Caroline Long, a professor in Childhood Education, at the Faculty of Education, University of Johannesburg (UJ), the expression "mathematics as a human activity" aligns with the idea that mathematics has its roots in everyday situations; it is then from the generalisation of principles emerging from these situations that more abstract mathematics is developed.

Professor Long pointed out that the idea that mathematics should be creative and enjoyable is supported by both highly respected mathematicians and educational philosophers in this movement. "How is it that when we have had a movement for reforming mathematics education since the 1970s, almost 50 years, we still have the perception of mathematics as boring or of no relevance for the majority of people?" Prof Long posed this question when she delivered her professorial inauguration address, **"Mathematics as a creative activity: mapping a conceptual field for mathematics teacher education"**. Prof Long's inaugural address took place in the University's Council Chambers, Madibeng Building, Auckland Park Kingsway Campus on Wednesday, 19 September 2018.



Prof Long argued that doing mathematics is a creative activity, and if doing mathematics is a creative activity, then the teaching of mathematics, and the teaching of prospective mathematics teachers must certainly be. She focused on the topic good education, then made the link to teacher education. Against this broad focus she positioned reform mathematics education, focusing mainly on Gérard Vergnaud's theory of conceptual fields.

In attempting to map a conceptual field for mathematics teacher education, Prof Long proposed that there are many domains and constructs (personal competence, social values, mathematical proficiency, pedagogical knowledge, assessment skills and knowledge of research design) that require attention in order to prepare the student teachers for the education environments in which they will work.

Prof Long explained that one of the challenges for mathematics education is that mathematical concepts are rooted in situations and problems. Consequently from a conceptual perspective, a single concept may be applied in many different problem situations, and one situation or problem may require many distinct concepts. Another reality that must be faced from a cognitive perspective is that a single concept does not develop in isolation but invariably develops in relationship with other concepts. It is important therefore to consider a conceptual field made

up of situations, concepts and representations for both the teaching and researching of mathematics.

"The role of the teacher, is to transform the learner's intuitive and localised conceptions of students that can be applied to a single problem. into generalised and explicit concepts that can be applied to a class of problems, thereby developing more powerful mathematics."

The notion of good education, teacher empowerment and agency, reform mathematics, assessment and measurement, and a research approach, all combine to contribute to mathematics teacher education, essentially a creative activity, where the first stages involve play, but then lead on to precision and generalization," concluded Prof Long.

Professor Caroline Long has served on the Qualifications Standards Committee for Umalusi since 2013, the South African Mathematics Olympiad committee from 2013, and the SAERA Special Interest Group for Assessment, from 2015. She has a C2 research rating from the National Research Foundation.

She is currently a member of the Psychology of Mathematics Education (PME) 2019 organising committee, and a co-chair for the International Congress of Mathematics Education (ICME 14), Topic Specific Group on Assessment in Mathematics Education, taking place China in



Limpopo Teaching Awards

At the 2018 Limpopo Teaching Awards, Mr Linford Molaodi, our Master's student in Information and Communication Technology in Education, won in the Excellence in the ICT Enhanced Learning and Teaching category and will be proceeding to the National Teaching Awards. He teaches Physical Science to Grade 10 – 12 learners at Masemola High School in Ga-Masemola, Limpopo. He completed both his BEd in Senior Phase & FET and BEd Honours at UJ's Faculty of Education and is a founding member of TeaSterl Projects, an organisation encouraging educators' use of ICT in teaching.

Linford also received first position in the Science and Technology category at the South African Men of The Year Awards ceremony held Carnival City in November 2018. South African Men of The Year Awards is a national campaign that seeks to affirm South African men to be positive male role models. The initiative is about nation building and transforming South African men to be active in nation building and to stand up against any form of women, children and older persons abuse.

I promise to intensify my dedication and support for disadvantaged rural Learners and educators requiring training on innovative teaching strategies, says Linford.

TechnEd

The TechnEd Catalyst Project: A rewarding organised community engagement project over two decades

TechnEd was established as the first school-university based technology centre in South Africa in 1999. Initially we envisaged that technology education was going to be promoted among learners and their teachers by physically bringing them. Gradually we realised that this was an expensive and time consuming endeavour. A more efficient and effective way was to take technology education to schools by means of learning and teacher support material (LTSM). UJ staff - under leadership of Profs Piet Ankiewicz and Estelle de Swardt - and some of their post graduate students developed LTSM. Thus, the TechnEd Catalyst Project was established in 2000. It comprises partnerships between UJ (Faculty of Education), departments of education and the private sector. LTSM and/or continuing professional development (CPTD) are sponsored out of funds earmarked for corporate social investment (CSI).

The TechnEd Catalyst Project was registered as an organised community engagement (CE) project with the Department of CE at UJ in 2013. Since the inception of TechnEd in 1999 sponsorships to the value of R6,8m have been raised from 16 partners.

In 2018 the Albert Wessels Trust/Toyota SA sponsored LTSM to the amount of R397 000 to Tetelo Secondary School in Soweto and Pretoria Technical High School and High School Gerrit

Maritz in Pretoria. These partner schools were identified based on their regular participation in a second CE project in the Technology Education Unit (TEU), namely the Further Education and Training Community of Practice (FET CoP) under leadership of Dr Francois van As. A new partner, ID Logistics, sponsored LTSM to the amount of R119 000 in 2018 to Sondelani Full Service School in Durban and Wordsworth High School in Benoni as schools of their choice. Thus, 2 150 Grade 8 and 9 learners and 20 technology teachers per term have benefitted from these sponsorships in 2018.

TechnEd's last donor function was held eight years ago in 2010, and mainly due to the detrimental effects of the economic recession of 2008/9 the function on 25 October 2018 was the first one since then. At this very successful, inspiring, sophisticated and prestigious function - which was mainly arranged by Dr Rina Grobler and Werner Engelbrecht - "Beeld in Onderwys" and ID Logistics received certificates to acknowledge their valuable contributions. The Albert Wessels Trust/Toyota SA became TechnEd's first Gold Partner ever in 2008 with a total donation to the amount of R630 000 since 2005. Their cumulative donation has increased to the amount of R2,09m in 2018. Hence, they have qualified to be upgraded to a Platinum Partner, and received a plaque.



The logos of TechnEd's 16 partners since its inception in 1999



Ms Elize Engelbrecht, "Beeld in Onderwys" representative; Mr Amos Letsoalo, ID Logistics representative; Prof Piet Ankiewicz, Head of TechnEd and Ms Martha Motsatsi, The Albert Wessels Trust/Toyota SA representative.

To date 3 700 teachers have participated in certified CPTD as part of the TechnEd Catalyst Project. The CPTD model that has been researched and developed as a component of the Catalyst Project was commended internationally. A significant research outcome - as an international first - was seven criteria for judging CPTD. In 2009 the TechnEd Catalyst

Project was a finalist in the National Science and Technology Forum (NSTF) Awards for 2008/09 in the category "Research for innovation by a team in a Community Based Organisation" (CBO). The TechnEd Catalyst Project was recently also awarded the best CE project at UJ in the category "Organised Outreach linked to Community-based Research" on 2 November 2018.



Prof Piet Ankiewicz receiving the award for the best community engagement project in the category "Organised Outreach linked to Community-based Research".

The TechnEd Catalyst Project as TechnEd's flagship venture has proved to be a very successful CE project. This has only been possible through the support of donors, the hard and dedicated work by colleagues and staff, as well as the support of friends over the past two decades.

UJ seminar equips teachers to be effective educators in Africa

"Teachers must be lifelong learners, as learners and technology change all the time. Learning how to be a lifelong learner is important. This is something we aim to teach our students and should be something that each of us should be pursuing in our daily professional lives."

These were the sentiments shared by Prof Sarah Gravett during a two-day seminar on August 27 - 29 2018, on the Soweto Campus.

The Faculty of Education at the University of Johannesburg (UJ), together with Education International (EI), the Open Society Foundation Education Support Program (OSF-ESP) and the Open Society Initiative for Southern Africa (OSISA) hosted a two day seminar entitled '**The Future of the Teaching Profession in Africa: Teacher Learning, Professionalism and Growth.**'

"If we want sustained development in any country, we must have excellent teachers," explained UJ's Prof Sarah Gravett, Dean: Faculty of Education.

The purpose of the seminar was to enable an open, informed and critical reflection and discussion on common challenges and opportunities for strengthening teacher learning, professionalism, and growth in Africa. It seeks to share initiatives that are being undertaken on the continent, in order to support cross-country exchange and learning, to better understand what is necessary to strengthen teachers' development and growth and to explore possible opportunities for collaboration.

One of the speakers Martin Henry from Education International stated, "Tell me about the quality of your teachers and I know who you are. In this seminar, we opt to share ideas, experiences & research to speak to us about how to bring teacher quality. Our African Continent needs quality education."

About 80 participants represented a range of key education stakeholders in Africa. The event saw representatives from teacher bodies, ministries of education, regional and international organisations, academics, NGOs and experts in the field of education committed to enhancing the development of the teaching profession.

The keynote speakers included Prof Sarah Gravett; Martin Henry, Education International; Mary Metcalfe, University of Johannesburg; Hugh McLean, Open Society Foundation Education Support Program; and Velaphi Mamba, Open Society Initiative Southern Africa

The seminar shared and reflected on challenges, emerging trends and learning from different contexts in Africa regarding the development of the teaching profession; Building possibilities for collaboration within and across country contexts around issues of teachers' learning, professionalism, accountability and development; Identifying the role of different stakeholders in shaping policies and processes related to the teaching profession and, where relevant, to develop joint commitments to strengthening teachers' development and growth.



UJ's Prof Sarah Gravett, Dean: Faculty of Education



Prof Piet Ankiewicz in front of the Rockelstad castle in Sparreholm, Sweden.



Prof Piet Ankiewicz (sitting on the left) gets introduced as main reviewer and discussant at the "Rockelstad-seminariet" by Prof Jonas Hallström (2nd from the left), the co-supervisor of PhD student, Johan Svenningsson (sitting on the right), while Dr Claes Klasander (Director of CETIS) looks on.

Prof Piet Ankiewicz visits Linköping University (LU) in Norrköping, Sweden

Prof Piet Ankiewicz after tenure of two consecutive terms as head of department of Science and technology education has been on a nine-month sabbatical in 2018. He spent two weeks at the Technology and Science Education Research Unit (TESER), in the Department of Social and Welfare Studies at the Linköping University (LU) in Norrköping, Sweden. He specifically chose to visit LU mainly as a result of networking at the Pupils Attitudes Towards Technology (PATT) conference in Marseilles, France in 2015. The Technology Education Research (TER) Unit at LU focuses on three of Prof Ankiewicz's research niches, namely philosophy of technology, students' attitudes towards technology and indigenous technology knowledge systems (ITKS). He was invited by Prof Jonas Hallström, Head of the TER (LU), and one of the co-editors of a Sense series book on philosophers of technology, to author a chapter on the implications of Feenberg's critical theory for technology education which has already gone into production in September 2018.

Prof Ankiewicz was also invited to deliver the following two keynote addresses at the annual research seminar "Rockelstad-seminariet" at Rockelstad castle in Sparreholm, hosted jointly by TESER and the Swedish National Centre for School Technology Education (CETIS):

1. A brief overview of technology education in South Africa since 1994;
2. The affordances of Mitcham's philosophical framework for technology education.

Prof Ankiewicz was also appointed as the main 90%-reviewer for a doctoral student's 90% seminar. He had to summarise and report on the study to approximately 30 technology and science researchers in Sweden, and engage with the PhD student, Johan Svenningsson (also an assistant lecturer at LU), his supervisors and two co-reviewers on possible improvements to his dissertation.

Prof Ankiewicz also had exploratory discussions with the colleagues (Profs Jonas Hallström and Dr Cecilia Axell) about joint collaborative research on the philosophy of technology (specifically STEM education), attitudes studies and ITKS. Two joint collaborative research projects have been conceptualised for the future:

1. The affordances of philosophy of technology for the "T" in STEM education. Profs Ankiewicz and Hallström are working on a paper for the next PATT conference in Malta 2019
2. Indigenous technology and the Swedish Sami people. Dr Cecilia Axell is already involved in data collection for this project.

Certification of the Faculty of Education Research Ethics Committee



Dr David Robinson (Current Chair of the REC) and Prof Geoff Lautenbach (Former Chair of REC)

In November 2018 the Faculty received re-certification of the Research Ethics Committee from the National Health Research Ethics Council (NHREC). This certification was the result of an audit carried out by the NHREC, a process which started in 2017 and ended in mid-2018.

The Faculty's Research Ethics Committee is constituted by members of each of the Faculty's Departments, as well as a legal advisor, and a community representative. The Committee meets regularly to process applications for ethical clearance to conduct research. Although the majority of the applications are from students, staff members, or research projects associated with the Faculty, there are also occasional applications from external bodies or organisations in the field of education.

The Committee engages in rigorous critique of applications in order to ensure that the research that is undertaken meets the criteria for ethical research processes. As such the Committee is a contributor to the high standards of research in which members of the Faculty engage.

Several members of the Committee have completed training through the Steve Biko Centre for Bioethics and this has contributed to the rigour of the process.

Particular mention must be made of Prof Geoff Lautenbach, who chaired the committee during the initial auditing process. His leadership and careful administrative practices were instrumental in achieving the certification.

Editorial

In this final issue of EduBrief for 2018 there is evidence once again of the high quality of scholarship and community engagement in which the Faculty is involved.

It is fitting that we celebrate the scholarship of Prof Caroline Long, a specialist in the field of Mathematics Education. It is noteworthy that, in her inaugural address, Prof Long emphasised the location of mathematics in ordinary situations; for too many people mathematics is regarded as alien, and is therefore difficult and unnerving. If mathematics were regarded as part of everyday life it would, probably, be less challenging and more accessible.

There are several examples of community engagement: the Techned Catalyst Project is an example of ongoing support from and engagement with various institutions or organisations in the broader community. This project has been running for several years and has resulted in the investment of a lot of time and money, and is an example of the success that is possible in such a venture.

The two-day seminar in August addressed pertinent issues in the field of teacher education and professionalism. As such, this seminar was involved with what might be seen by the Faculty as core

business; the empowerment of teachers, and the development of teachers as professionals, critical thinkers and motivators. The idea that a teacher is also a learner, and that learning is a continuous process, is a valuable notion and something from which all people in education could benefit.

Prof Piet Ankiewicz used his sabbatical to engage in academic work and international scholarship. His standing in the field of the philosophy of technology is underlined by the significant role he played in the conference in Sweden. In an earlier issue of EduBrief in 2018 we reported on Prof Piet Ankiewicz's NRF rating. It is clear that he continues to enhance and develop his own learning.

The Research Ethics Committee is one of the Faculty's Committees, and it has been granted certification by a national body. This Committee addresses applications for ethical clearance for research purposes, and serves the Faculty and the broader community by providing guidance as to the acceptability of research.

This final issue of EduBrief for 2018 provides several insights into the activities in which the Faculty is engaged, and showcases scholarship and community engagement. The Faculty is clearly developing a significant profile across a range of areas and there is every reason to believe that this upward trend will continue.