

### EDITORIAL

In this, the first issue of EduBrief for 2017, the reader encounters a range of articles dealing with academic development, international connections, practice-based learning and excursions as an extension of teaching and learning.

It is evident that the Faculty of Education is strongly committed to the development and advancement of research writing, and several colleagues attended the academic writing support that UJ offers.

The use of excursions to support the teaching and learning process is a significant one, in that the material engagement with facilities that were previously theoretical is a supplementary activity that provides students with an understanding that is experiential based as well as being imagined.

The Funda UJabule school project about the development of mini greenhouses – and the produce thereof – is an example of how scientific knowledge can be used to benefit a community.

The international interaction with several Brazil-based academics provided great insights into the challenges that exist in Brazil and South Africa with regard to the issues that frame language education. This initial contact between the two groups of scholars could conceivably lead to further and more significant collaboration.

# Research Foci and Outputs of New Colleagues in SciTechEd

The Science Education Unit in the Department of Science and Technology Education (SciTechEd) has welcomed four new colleagues in their midst over the last few months.

**Lydia Mavuru** has qualified for a PhD in Science Education at the University of Johannesburg and joined the department in February 2017 as a senior lecturer. She has published in various conference proceedings since 2014 and recently in the Journal of Innovative Research in Education, and holds a Google Scholar h-index of 1. Her research interest is in socio-cultural perspectives in science teaching and learning, with a particular focus on how this impacts on teachers' PCK and classroom interactions.

**Busisiwe Ndawonde** holds a DEd in Science Education from the University of Zululand and has joined the department as a senior lecturer in January 2017. She has published in three accredited journals since 2007. All these journals are listed on the Thomson Reuters/ ISI Web of Science List. She holds a Google Scholar h-index of 1 and also an i10-index of 1. The areas of her research interest include Ethnobotany, Indigenous



Dr Lydia Mavuru



Dr Busisiwe Ndawonde

Knowledge, Science Education, Teaching and Learning in Higher Education, and Academic Development.

**Pihlo Pitjeng-Mosabala**, who holds a PhD from the University of the Witwatersrand, joined the department as a lecturer in August 2016. Her publications include a chapter in a book in 2014 and three conference proceedings of which one in 2012 and two in 2013. She holds a Google Scholar h-index of 1. Her research interest is focused on the Pedagogical Content Knowledge (PCK) of science teachers.

**Aviwe Sondlo** has joined the department in February 2017 in the capacity of an assistant lecturer. He holds a MSc in Science Education from the University of the Witwatersrand and presented his research findings at the SAARMSTE conference in 2016. He is currently enrolled for a PhD in Science Education in the faculty of Education at the University of Johannesburg. His research focus is on pre-service science teachers' pedagogical orientations.

Members of the SciTechEd department are looking forward to the contributions these new colleagues will make towards our department's strive for excellence.



Dr Pihlo Pitjeng-Mosabala



Mr Aviwe Sondlo

## Excursions as a tool to develop students' attitude towards technology

In our teacher education programmes we teach the students how to define an aim for a specific lesson and how to write lesson objectives that will help the teacher to achieve the main aim of the lesson. These objectives should cover the cognitive domain (knowledge), the psychomotor domain (skills) and the affective domain (attitudes and values). The cognitive domain deals with the acquiring of knowledge and the development of intellectual abilities and cognitive skills and we regard these as minds-on objectives. Whereas, the psychomotor domain combines intellectual and manipulative or motor skills, which include hand skills and hand-eye coordination, which are regarded as hands-on objectives. The affective domain deals with attitudes and values which can be regarded as the hearts-on objectives. Although the three domains can be distinguished in the content of Technology it cannot be separated into these three domains. The reason for this is that "A learner cannot do technology (procedural knowledge) without knowing (conceptual knowledge) and having the desire (attitudes and values) to do so (affective component)".

The mentioned minds-on and hands-on objectives are relatively easy to achieve in the classroom, but the "desire to do" (the affective component or the hearts-on objectives) is more difficult to achieve in the classroom. One of the aims of the National Curriculum Statement is to educate learners that are able to use science and technology effectively and to show responsibility towards the environment and the health of others. In addition to this, one of the specific aims of Technology as a subject, is to contribute towards learners' technological literacy by providing opportunities to appreciate the relationship between people's values and attitudes, technology, society and the environment.

The specified weighting of these values and attitudes for tests and examinations: Grade 7-9 in Technology is 20%, and two of the topics in Technology are related to thermal power stations, and electrical/ electronic systems. Although students are aware that most of our electricity comes from thermal power stations fueled by coal, and that they probably have experienced "load shedding" and "power outages", none of them have previously visited a power station to observe the actual production process whereby heat energy is converted into mechanical energy where after electrical energy is produced. In addition to this, students are familiar with various electronic devices (TV's, radio's, cell phones, etc.) but they do not have any first-hand experience of how these electronic systems function in the real world.



Students and staff from SciTechEd at the Lethabo Power station.



Students and staff from SciTechEd at SENTECH.

To broaden the "desire to do" (the hearts-on objective) of the senior students in Technology Education they went on two excursions and were accompanied by their lecturers from the department of Science and Technology Education. Firstly, they visited the Lethabo Power Station which is situated in the northern Free State. After a lecture and watching various films about the site clearing, terracing, piling, foundations, boiler house structure, the turbine house structure, the chimneys, and safety regulations for visitors, they undertook a guided tour through the power station so that they could get a better understanding of the production process which includes the coal consumption, the crusher, the furnace, the boiler, the turbine, the generator, the transformer, the cooling tower, and the chimney.

Over and above the impressive technology the students also learned that the Tswana word "Lethabo" was aptly chosen as the power station's name: it means "good living, happiness" and reflects the substantial contribution Eskom is making to enable South Africa to reach high standards in industrial, commercial and social life. To minimize the impact on the environment, this power station represents a major step forward in the utilisation of low-quality coal, and the water management system is designed specifically for the treatment, re-cycling and re-use of water. During the second excursion they went to the Sentech tower in Brixton. Sentech is the signal distributor for the South African broadcasting sector. Although the tower was originally built for FM radio transmission, it is currently also used for television transmission. Presently Sentech broadcasts 18 FM stations and seven TV stations. The students were enlightened by an expert in the Information and Communication Technology and they saw where the transmitters converts the audio signals from the studios at the SABC into radio frequency signals that are amplified and transmitted from the antennae on top of the tower.

The group expressed their gratitude towards the lecturers and mentioned that these excursions refreshed their "desire to do" (hearts-on objective). They especially appreciated the interplay between technology, the feeding of energy into Eskom's transmission network for distribution to its customers, and the responsibility of maintaining the precious ecology of the environment. They also gained a better understanding of the electronic network of the broadcasting sector.

### Excursion to the Lethabo Power station by senior technology students

One of the aims of the National Curriculum Statement Grades R-12 is to produce learners that are able to use science and technology effectively and to show responsibility towards the environment and the health of others. In addition to this, one of the specific aims of Technology as a subject, is to contribute towards learners' technological literacy by giving them opportunities to appreciate the interaction between people's values and attitudes, technology, society and the environment. The specified weighting of these values and attitudes for tests and examinations: Grade 7-9 in Technology is 20% and one of the topics in Technology and also in Natural Sciences is related to the advantages and the disadvantages of thermal power stations.

Although students are aware that most of our electricity comes from thermal power stations fueled by coal, and that they probably have experienced "load shedding" and "power outages", none of them have previously visited a power station to observe the actual production process whereby heat energy is converted into mechanical energy where after electrical energy is produced.

On Friday 4 November senior students in Technology Education, accompanied by their lecturers from the department of Science and Technology Education, visited the Lethabo Power Station which is situated in the northern Free State. After a lecture and watching various films about the site clearing, terracing, piling, foundations, boiler house structure, the turbine house structure, the chimneys, and safety regulations for visitors, they undertook a guided tour through the power station so that they could get a better understanding of the production process which includes the coal consumption, the milling plant, the boilers, the turbines, the generators, the cooling towers, and the chimneys.

Over and above the impressive technology the students also learned that the Tswana word "Lethabo" was aptly chosen as the power station's name: it means "good living, happiness" and reflects the substantial contribution Eskom is making to enable South Africa to reach high standards in industrial, commercial and social life. The advanced power generation technology applied at Lethabo reinforces Eskom's reputation as a world leader in the field.

After an enlightening few hours, the group returned home with an appreciation of the interplay between technology, feeding energy into Eskom's transmission network for distribution to its customers, and the responsibility of maintaining the precious ecology of the environment.

### The emerging researchers in the Department of Science and Technology Education (SciTechEd) are blooming

Four colleagues from SciTechEd participated in the academic staff writing development programme of the Faculty of Education sponsored by the Department of Higher Education and Training (DHET). Research activities included among others, academic workshops, a writing retreat to develop conceptual frameworks, meta-cognitive strategies, reflections on writing, journal editors' expectations, writing for a specific journal, autobiographical reflections of writing identity and journey, and academic publishing.

During the writing retreat, the discussion was also facilitated by two distinguished professors, Kerry Kennedy (an Advisor (Academic Development) at Education University of Hong Kon) and Tony Onwuegbuzie (in the Department of Educational Leadership at Sam Houston State University, United States of America).



Emerging researchers in SciTechEd: Rabaitse Diseko; Erica Spangenberg; Francois van As and Werner Engelbrecht

On 16 February 2016 colleagues had the opportunity to showcase their research at a Faculty Research Indaba which was held at Auckland Park Kingsway Campus Library.

Rabaitse Diseko presented a paper on "Teachers' acceptance of the use of tablet devices in classroom context"; Erica Spangenberg focused on "A comparison of the curriculum ideologies of mathematics in middle and senior secondary schools in South Africa"; Francois van As concentrated on "Developing 21st century skills among undergraduate technology student teachers" and Werner Engelbrecht elaborated on "Learning and teaching support materials to promote 21st century skills for junior secondary school students".

### EDUCATIONAL LINGUISTICS WEBINAR

On the 21st and 22nd February 2017 some members of the Department of Education and Curriculum Studies participated in an international webinar with colleagues at universities in Brazil.



### The participants were:

- ~ University of Johannesburg: Leila Kajee, David Robinson, George Makubalo
- ~ University of Unicamp, Sao Paolo, Brazil: Prof Ana Lucia Guedes and others
- ~ Federale University of Parabaio, Brazil: Prof Carla Beiina

The focus of the webinar was sharing language in education practice.

Prof Guedes shared her work in reflective teacher development; writing through images; reading (visual) in public spaces. She provided thoughtful insight into the relationship between reading and writing, using theoretical perspectives from New Literacy Studies, cultural history, and language sciences (Bakhtin). Her methodologies include ethnographic, anthropological and dialogue-based research and teaching.

Her colleagues' work includes the body and education, using gestures and stories, and physical education. Fruitful discussion emanated around multilingualism and multiculturalism, and language varieties. In Brazil English is not as widely taught as in South Africa, the focus being Spanish and Portuguese. Several heritage languages are offered across the country.

Presentations by the Federal Uni of Paraiba (UFPB) include academic writing, as well as publications that emanated from the research groups. There is sufficient theoretical overlap between this work and that of the academics at UJ; the work of Bhatia, Bourdieu (field), Hyland (language practices and events), New Literacies; and Discursive domains is all present.

It is of interest that academic literacies is a strong focus with postgraduate students in these Brazilian universities. These universities utilise the model of small classes, in which student numbers tend to be no more than 20. In these classes writing is regarded as a dialogic process and large class numbers do not support the teaching and learning process.

Other work at the Brazilian institutions includes teacher development, in which pre-service teachers address concepts of teaching, language, identity construction and re-construction. There is also a focus on in-service teacher development which addresses topics such as inclusion, education policy, and material adaptation or development.

The UJ academics presented on the focus of each of their own work – Leila Kajee presented on NLS and narratives, George Makubalo on reading, and David Robinson on using ecocriticism to read literary texts.

### Intermediate phase students teach grade 4 learners to build mini greenhouses

The first year B.Ed intermediate phase students participated in a service learning project during the second semester of 2016. The project entailed the creation of ten mini greenhouses that were used to grow a vegetable garden at Funda UJabule primary school adjacent to the Soweto campus.

These mini greenhouses do not take up as much space and could be planted in areas where traditional gardens would not be suited. The planting event occurred on 18 August 2016 where the students taught the grade 4 learners how to construct the mini greenhouses. The learners helped plant various vegetable seedlings which included spinach, lettuce, spring onions, parsley, carrots and beans.

This project was linked to content from the grade 4 Natural Science and Technology curriculum document and emphasis was placed on teaching learners what plants need to grow. The students and learners cared for the plants during the following eight weeks by ensuring that the plants were watered regularly.

The excitement was tangible on 13 October 2016 when the students arranged a special harvest day and picnic where the learners were taught how to harvest these vegetables. After they harvested the vegetables, the students demonstrated how these vegetables are used in creating various delicious food dishes. Each group had to prepare samples of these dishes to allow the learners to taste the fruits of their labour.

At the end of the harvest day the learners were given gift packs containing garden starter kits to encourage them to start their own vegetable gardens at home.



Some learners standing proudly with their greenhouse.



Another greenhouse and learners, with a scarecrow – not from the **Wizard of Oz.** 



### EDUCATION ASSOCIATION OF SOUTH AFRICA (EASA) -MEDAL OF HONOUR 2017 AWARDED TO PROF RAJ MESTRY

**Prof Raj Mestry's** achievement in the field of teaching, research and community engagement is commendable. Despite his late entry into academia, he made exceptional inroads through his resilience and tireless efforts to conduct relevant research, publish extensively and provide quality education to students. Through hard work, dedication and commitment, he has become a renowned scholar in the field of financial and human resource management with strong emphasis on social justice and equity. Raj reached the pinnacle of his career in 2010 (after only 8 years) when he was promoted to full professor, and then appointed as Head of Department in Education Leadership and Management at the University of Johannesburg.

For the past fifteen years, he has taught at undergraduate, B Ed (Hons), and M Ed levels in Education Leadership and Management. He is respected for his expertise in Financial Management nationally and internationally. Raj has supervised and co-supervised numerous M Ed, D Ed and PhD students. He is of the firm opinion that it is quality and not quantity that matters. Besides eight students receiving their Masters' degrees *cum laude*, three students were awarded the Chancellor's Medal for the most outstanding M Ed results in the Faculty of Education, and two students received UJ scholarships to continue their PhD studies.

In the past 15 years, he has published over 50 articles in national and international accredited journals and conference proceedings. In 2013, He recorded the highest number of accredited published units in the Faculty, and in 2015 was placed third highest in the Faculty. From 2011 to 2015, he recorded the highest number of research outputs in the Faculty.

He is an NRF-rated researcher and his citation record, according to Google Scholar since 2011, is 581 with an h-index of 14. As co-author, he received an award for the best article published in the *Education and Management Journal* (EMAL) – an international SAGE publication.

He is actively involved in numerous community engagement activities. Through his involvement with the Education Leadership Institute (ELI) at the University of Johannesburg, he has provided training in school financial management and various facets of leadership to school principals, school management teams and governing bodies. The ELI has forged strong links with the Harvard Graduate School of Education and has partnered with them to provide continuing professional development for principals and district officials. Since 2011, Raj has annually coordinated training for a group of principals and district officials at Harvard. He has also made a footprint in Africa by training school principals in Namibia.

It is his firm belief that the success of the country lies in the improvement of the South African education system, and he hopes that through his research and personal commitment to the improvement of teaching and learning in South African schools, that he will make a significant contribution to the progress and enhancement of education in South Africa.

### THE POST-DOCTORAL RESEARCH FELLOWS COLLABORATION

The Faculty of Education and its community of Post-doctoral Research Fellows held a Mini-Conference on 18 May 2017. This research and collaborative development event was a platform of peer-to-peer research sharing and critical feedback from distinguished faculty, Faculty of Education members, and other PDRF colleagues. The event offered an engaging overview of current research under way in UJ's Faculty of Education as well as a brief opportunity for collaborative feedback.

The three sessions of the day focused on higher education, women and children, and theorising practice. In her keynote address, Prof Carmel McNaught, Distinguished Visiting Professor at the University of Johannesburg, presented "Strategies to improve success in high-quality journal publications". She emphasised two aspects of research publication in South Africa. The first is knowing which journal(s) to target and the second is avoiding all the common mistakes in academic writing. Prof Mcnaught is also Emeritus Professor of Learning Enhancement and former Director of the Centre for Learning Enhancement and Research (CLEAR) at the Chinese University of Hong Kong.



## PROMINENT ALUMNI

JLTY OF EDUCATION

**Prof Murembiwa Stanley Mukhola** was born at Mashamba village, the only child of Mr and Mrs Wilson Mukhola.

He grew under the guidance of his grandmother, who always impress him about the value of education. After completing his standard 6 (first class) in 1971, he studied at Lwenzhe and Mphaphuli Secondary schools. Prof Mukhola completed his diploma in 1982 and from there he never stopped studying. He received his doctoral degree in Environmental Education at the University of Johannesburg. His foster parents Franz and Erna Werbitzky in Germany always encouraged him to aim for the sky, as a result he never disappointed them. Academically, Prof Mukhola has been a lecturer, senior lecturer, Campus director, Executive Dean of the Faculty of Health and Social Sciences and also Faculty of Humanities. Prof Mukhola was inaugurated full professor at TUT on the 29 May 2015. He now hold the position of Deputy Vice-Chancellor: Teaching and Learning at the Tshwane University of Technology. Prof Mukhola has published extensively and supervise both masters and four doctoral students to completion. He is a visiting scholar at KU Leuven where he also co-supervise one PhD Student to completion. His motto is "I can do all things through Him who give me strength"

# Education Conversations sheds a spotlight on mathematics in South African schools

Education Conversations is an attempt by the Faculty of Education at UJ and Kagiso Trust to encourage greater stakeholder engagement in the creation of an effective public education sector; the goal being to move away from focusing on the pathology of the sector and instead foster debate about the initiatives that have proved fruitful.

Why do South African learners perform so poorly in mathematics? What can we do to improve performance? Is maths still relevant in our current context? These are some of the questions that the Faculty of Education attempted to answer at the latest seminar of Education Conversations, hosted in conjunction with Kagiso Trust.

Together with panellists Dr Linda Zuze of the Human Sciences Research Council, Dario Fanucchi, technical director at Isazi Consulting, and consultant, Nontobeko Mabutu, the event – themed 'Mathematics: How does South Africa measure up?' – examined findings from the recent Trends in International Mathematics and Science Studies (TIMSS), and their implications. The TIMSS findings were based on a sample of 12 514 learners, 334 mathematics teachers and 331 science teachers at 292 schools in South Africa.



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