



**6<sup>TH</sup> ANNUAL SATN CONFERENCE 2013  
UNIVERSITIES OF TECHNOLOGY: NEW GENERATION UNIVERSITIES TEN  
YEARS ON**

**HOSTED BY: TSHWANE UNIVERSITY OF TECHNOLOGY,  
KIEVITS KROON COUNTRY ESTATE, PRETORIA  
2 OCTOBER 2013**

**1. PLENARY SESSION**

**Chairperson: Prof. Thandwa Mthembu, Chairperson of the SATN and Vice-Chancellor and Principal, Central University of Technology**

**1.1 WELCOME**

**Prof. Thandwa Mthembu, Chairperson of the SATN and Vice-Chancellor and Principal, Central University of Technology**

**1.1.1**

Prof. Mthembu extended a word of welcome to all attendees. All protocols were observed. The Vice-Chancellor and members of staff of Tshwane University of Technology as well as Prof. Jansen van Rensburg and Mrs Venter of the SATN were thanked for making the arrangements for the conference. A word of welcome and gratitude was also extended to the conference sponsors: Sasol, SHARP, MerSETA, Bestmed and Purco.

Technikons became Universities of Technology in 2004. This political decision was not based on a blueprint to guide the characteristics, role and functions of the sector. In an effort to help define the characteristics, role and functions of UoTs, SATN was established by UoTs. A book was published in 2007 on the philosophy, characteristics, role and function of UoTs, which will have to be revised in time.

The theme of this conference is 'New Generation Universities Ten Years On'. The aim is that this conference should guide South African universities of technology to think about this issue. The concept of new generation universities involves philosophies, characteristics and practices that defy parochialism; it is about an intellectual leap towards becoming a leader in the sector.

There are many models for new generation universities worldwide. The Canadian model in particular is both aspirational and assimilationist, aiming to integrate its existing structure into a model aiming to

be on par with the top universities internationally. This conference provides an opportunity to grapple with some of these models, understanding how it influences UoTs' practices and engagement with broader society. The big question is 'Have UoTs become new generation universities?' Selected papers from this conference will be peer reviewed and published in a special edition of the Journal for New Generation Sciences, in an effort to take the process forward.

**1.2 CONFERENCE OPENING**  
**TECHNOLOGY TRENDS: SKILLING OUR YOUTH FOR A VERY DIFFERENT WORLD**  
**Mr Brendan Mc Aravey, Country Manager, Dell South Africa**

**1.2.1** It is necessary to challenge conventional wisdoms about what makes an individual successful. Claiming that talent is the only pre-requisite is not necessarily true; often success requires both opportunity and time to become a reality. Examples of individuals who had talent, time and opportunity include Bill Gates.

The rate at which things change in the world of technology is increasingly rapid. It is therefore necessary to equip people to keep up with these constant changes, and not to get stuck in the old world. Trends changing the world of IT include:

- Transform – it is likely that the world will see a significant or complete IT overhaul in the next 3 years.
- Connect – 350 million employees will use smartphones.
  - Greater connectivity allows people to be much more productive using their own devices, working up to 240 hours per year more than the general workforce. By 2015, it is likely that 182 billion mobile applications will be downloaded and in use.
  - 50% of business mobile devices will be personally owned by 2015. This presents a major breach in security, with 50% of companies allowing BYOD (bring your own device) having experienced a security breach.
  - Nearly half of the people making up the workforce in a number of years will have grown up with smart technology.
  - Traditional work has changed. It is necessary to have people who can design sophisticated software that automatically manages devices, people able to develop applications for mobile platforms, and people who understand networking and security. It will also be necessary to build expertise in managing remote work forces.
- Inform – 11 exabytes of data per month will be generated by mobile devices by 2015.
- Protect – the growth of crime based on this high level of connectivity will increase.
  - The level of data uploaded daily to social and other platforms are growing exponentially. By 2015, the companies that will be able to manage the data and analyse it will outperform their peers. It is estimated that 4.4 million people will be required to manage the analytics associated with this increase in data
  - Software like Hadoop will present huge opportunities to managing and working with Big Data. The key is to operationalise analytics to make knowledge predictive and actionable.
  - Big Data can be used to predict what people will buy, do or choose. Universities are using Big Data analytics to predict student success.

The journey to Cloud starts with virtualisation. In the past, computers consisted of hardware, operating systems and applications. Over time, a layer of virtualisation was introduced between hardware and operating systems to consolidate servers in order to increase operational efficiency and management. Virtualisation soon became standard practice, and helped to improve reliability, resilience and

continuity. This has led to the development of the Cloud, which will lead to enhanced flexibility and increased self-service delivery.

The question is: 'Are students ready for the new normal, i.e. virtualisation?' 90% of enterprises now use a virtualisation programme. At present organisations operate various IT functions in silos, but this is changing towards a converged system solution. One step further will be a converged data centre unified by singular management experience. The next step will be to automate on- and off-premise IT, which will optimise agility.

Another aspect of IT that has to be kept in mind is the increase of High Performance Computing. As performance capacity increases, costs are coming down. This allows organisations to have the right answer, right away, at the right price, and enabling them to solve problems too big for conventional enterprise systems.

The most recent International Super Computing Conference was held in Durban. Students from China, America, UK and Germany participated; South Africa stunned the world by winning the International Super Computing Conference 2013. This shows that South Africa has the skills and talents which, combined with the right opportunities and time, will allow us to compete internationally.

Dell has created a scheme to provide opportunities for the youth, through a MoU with the DTI. Dell will build a state of the art HPC Solutions centre in SA modelled after a centre at Cambridge. Dell will also create an academy to promote and develop HPC skills through a 2-year programme for 5 graduates and 10 matriculants every year for the next 10 years. Dell will also fund the start-up of 10 new businesses over the next 10 years. Dell will continue to support the local HPC competition and will continue to sponsor SA students at the International Super Computing Conference.

The youth of South Africa has to be trained to deal with and adapt to change on an ongoing basis. Opportunities and time should be provided to our youth to deal with these changes.

### **1.3 THE CONFERENCE IN CONTEXT:**

**Prof. Lineo Vuyisa Mazwi-Tanga, Vice-Chancellor and Principal, Cape Peninsula University of Technology**

**1.3.1** UoTs were promulgated in 2003, but no blueprint or guidelines were provided in the National Plan on Higher Education. The intention of the reconfiguration of the higher education landscape was an attempt to move from the original apartheid-era university landscape, in which converting Technikons into UoTs appeared to have been an afterthought. Because Technikons were not regarded as fully-fledged universities, they were not funded to carry out research. The process of re-configuring the higher education sector provided an opportunity to reconsider the provision of research funding. The HEQF presented a challenge to UoTs because the process presented issues regarding articulation. Students from UoTs had to follow a long, arduous route to pursue postgraduate studies. The burden of the redesign of the curricula was particularly onerous for UoTs, and there has been little support at the systemic level or in terms of resources for re-conceptualising the philosophy and direction of UoTs.

This is the 6<sup>th</sup> conference of the SATN. SATN was an idea conceived a few years ago by a group of UoT Vice-Chancellors in Cape Town as a means to address all these concerns. While UoTs did not secede from Higher Education South Africa, the group needed a vehicle to address challenges and concerns unique to UoTs. One of the biggest challenges was the restrictive nature of the policy environment

governing UoTs. UoTs were required to provide enrolment plans, and were told by the DoE that they should not consider offering postgraduate programmes, which appeared to be in contradiction to the National Plan on Higher Education that lamented the low postgraduate and research outputs.

While UoTs acknowledged that it did not have capacity in all the areas of postgraduate research, they identified pockets of excellence where meaningful research could be produced. SATN determined that it should challenge policies that prevented UoTs from reaching their full capacity. Issues relating to teaching and learning and the relevance of curriculum were also identified, and a lot of work was done in these areas to provide career opportunities and articulation possibilities for UoT students.

Through the SATN UoTs have defined their roles. Matters of education will always be a moving target, as illustrated in the previous presentation. As knowledge develops and is transferred, new strategies and approaches have to be developed allowing UoTs to operate at the forefront of new developments. The lack of experience for the Technikon movement in research and research publication had to be addressed. In many areas, there was a sense of paralysis and an overt focus on teaching and learning, as if research and teaching are mutually exclusive.

Ten years on it is safe to say that the system has progressed beyond this phase as evidenced by the quality of the papers that were received for this conference. The theme of this conference indicates a time to take stock of the achievements of the UoT sector. The sub-themes address those areas that UoTs should focus on as they try to entrench their identities as institutions of higher learning. With the guidance and support of the SATN office, UoTs have managed to progress far beyond what they originally envisaged.

**2. PLENARY SESSION 1 (CONTINUED)**  
**THEME: THE SYSTEMIC AND POLICY ISSUES**

**Chairperson: Prof. Thandwa Mthembu, Chairperson of the SATN and Vice-Chancellor and Principal, Central University of Technology**

**2.1 KEYNOTE ADDRESS**  
**UOT DEVELOPMENT TOWARDS A NEW POST-SCHOOL SYSTEM – A REALITY!**

**Dr Engela van Staden, Chief Director: University Academic Planning and Management Support, Department of Higher Education and Training**

**2.1.1** Dr van Staden indicated that when the blueprint for UoTs was drafted in 2004, it was determined that UoTs will provide not only a range of higher education opportunities but should also be responsive to the needs of the country, learners and industry. The primary distinguishing characteristic of UoTs was identified as technology, and a long debate was devoted to what this term encompassed. Curricula were developed to incorporate technology and were aligned with labour market needs. The contribution of UoTs to research lies in the development of new understandings of problems through the application of new and existing knowledge to the problem solving process. The application of knowledge to address business and industry problems, the training of technologists, and the development of research were identified as UoT priorities.

The question is whether UoTs as an institutional type in a differentiated post-school system have transformed adequately to meet these imperatives. The conceptualisation of the UoT sector did not take stock of the post-school system, meaning that the policy development process had to adapt later

on. A framework for change to a single, coordinated system was developed to address the divided, binary system inherited from the past. UoTs had to be responsive to societal needs, increase access and respond to national imperatives. The transformation model was underpinned by a number of principles and was provided with some resources. The philosophy of White Paper 3 was based on the promotion of a flexible learning system that progressively encompassed the entire higher education system. Cooperation between institutional types was encouraged to allow articulation, but remains a challenge, and a Ministerial Task Team was recently established to investigate challenges in terms of articulation.

In 1997, PQMs were conceived as a means to distinguish individual institutions from their peers. Articulation was quite ably facilitated through the convenor system. It was accepted that a single qualifications framework should be developed, which led to the establishment of the NQF. Report 150 and 151 of 1997 provided the statutory provisions for the old Technikons, and specified what programmes these institutions could provide. It was clear that the system was fragmented, and that there was no articulation possible between UoTs and traditional universities. Some forms of professional training, which would have fitted more easily into the Technikon or UoT structure, were offered by traditional universities. Technikons were only allowed to start offering degree programmes in the early 1990s.

The National Plan for Higher Education of 2001 promoted institutional diversity. The need to build new institutional identities was identified as one of the imperatives of the National Plan. The challenge was to address perceptions about differentiated levels of quality. Three institutional types resulted from the process of revisiting the previous system, namely UoTs, traditional universities, and comprehensive universities. However, the Higher Education Act did not distinguish between various types of institutions, classifying them all as universities. The Higher Education Act of 1997, as amended, created opportunities for UoTs to respond to the human resource needs of the country. The Act provides a foundation for the universities, regardless of type or origin, to provide programme-based higher education and to respond to human resource needs, address past discrimination and focus on the creation of knowledge.

The programmes offered by universities, regardless of focus, remained separate. Transformation was limited to the high level, but at the programme level NATED Reports 155 and 156 remained applicable. The White Paper made it clear that an important task of the national system is to ensure a diversity of institutions, with different missions and programme mixes. Homogenisation was highlighted as something that should be avoided. Differentiation has long been debated across the sector, and is mentioned in the newly drafted White Paper. Since the establishment of the DHET in 2007, it has been clear that it is necessary to provide a diversity of educational options in a diversified higher education system. Some of the differentiation that resulted from historical differences continues to exist in disparate offerings and capacity to meet student needs.

It is recognised that differentiation must be driven and guided by a policy framework to provide increased articulation within the post-school sector. For articulation to be achieved a continuum will be required to meet national development needs. The White Paper allows for universities focusing on teaching as well as those that are research intensive. Each institution should think through its defined mandate within the larger higher education system. All universities in South Africa must offer high quality undergraduate education as the first step to overcome historical injustices inherited from apartheid South Africa. All universities should also undertake some level of research, depending on the vision and mission of the university. It is also necessary for universities to cooperate and liaise with

other post-school educational institutions. The HEQSF (Higher Education Qualifications Sub-Framework) recognises three different educational pathways. It aims to achieve and enable articulation and transfer of students between programmes and institutions, enhancing the flexibility of the system and allowing access to higher education.

The impact of a qualification sub-framework applicable to all higher education systems has to be considered. UoTs should be mindful of their PQMs and the strategic directions that they propose, as well as the role of the professional bodies on these structures. If UoTs play a stronger role in terms of the degrees offered in the higher education system, what will the far-reaching impacts for the system as a whole be? Even though there have been many achievements over the past few years, a lot remains to be done.

The system needs to expand both the number as well as the programmes on offer. The system should be as diverse as possible to meet the needs of society and industry. What should the role of UoTs be in an integrated, coordinated post-school education and training system that aims to expand access and improve quality in a single system?

The White Paper proposes that UoTs and FET Colleges should cooperate to increase the reach of their qualification offerings. A combination of technological competence, learning in the workplace, applied and multi-disciplinary research and entrepreneurship were identified as some of the desired outcomes. Research and innovation, entrepreneurship, national and international impact and recognition were identified as desirable attributes. Financial sustainability was identified as one of the most important characteristics.

Do UoTs meet these needs, and do they contribute to the labour market? The DHET had several meetings with respective higher education institutions in the country to talk about the main, common threads identified during the study.

UoTs' share of the national SET enrolments will decrease gradually by 2019; it is necessary to think about how this portion can be retained. If the planned projections at undergraduate enrolment levels have to be maintained, it will be necessary to increase the growth rate. The number of graduates will also be declining. The statistics for disciplines other than SET also raises cause for concern. UoTs are graduating more undergraduate degree students, and are increasingly claiming their share of postgraduate graduates in the country.

UoTs are also successfully using the framework and policy directives provided by the DHET to demonstrate that they are relevant in the higher education system. The question is what impact the proposed White Paper will have on the UoT sector. The expectations of UoTs in a changing policy environment will require reconceptualisation.

## **2.2 DISCUSSION**

**2.2.1** *Question: The Engineering Council identified that one has to account for the fact that UoTs issue degrees to people that have already been issued with diplomas – you cannot simply count diploma enrolments, because the figures could be misleading since two-thirds of that number could finish up with degrees. Has this been accounted for?*

*Question: It is not yet clear what impact the new funding framework will have on the types of*

*programmes that are being offered by institutions, whether diplomas or degrees.*

*Question: The analysis of the enrolment plan seems to indicate academic drift – is this correct?*

Van Staden: Calculations are based on HEMIS data per year, submitted by institutions, so it is unlikely that students will be counted double. The figures do reflect the cohorts going through the system.

If a programme is designed, it should be informed by a thorough conceptualisation and should not be based exclusively on funding. UoTs are known for the fact that they respond to industry and labour market requirements, and not only because they think they will qualify for more funding.

The funding framework review identified that the cost of training a diplomate or a degree graduate is the same. The funding framework identified the cost that it will take to produce an engineer or a technologist. The report will hopefully be released by the end of this year.

It seems that there are different trends emerging in terms of academic drift – there are many factors influencing programme approval and accreditation.

## **2.3 EVALUATION OF A FUNDING FRAMEWORK FOR HIGHER EDUCATION INSTITUTIONS IN NAMIBIA**

**Prof Errol Tyobeka, Special Advisor to the Rector, Polytechnic of Namibia**  
**Prof. Nnnesi Kgabi, Professor of Environmental Health Sciences, Department of Mining and Metallurgical Engineering, Polytechnic of Namibia (not present)**

### **2.3.1** The different drivers of change in higher education include:

- Democratisation of knowledge and process;
- Digital technologies;
- Integration with industry;
- Global mobility;
- Contestability of markets and funding.

Higher education in developing countries experience a dilemma:

- Altbach notes that HE is particularly becoming important in these communities, yet many countries are unable to cope with the rapidly rising costs of higher education from their revenues. Rena outlines further challenges facing higher education, including:
  - Increased demands for participation and enrolment;
  - Increased demand for types and number of institutions;
  - Increased pressure on the fiscus and thus a decline on expenditure per student;
  - Lack of infrastructure development;
  - Increases in the salary bills.

Studies by Kotecha and Pillay into the funding of higher education in the SADC region reported the following:

- A general decline in core funding of institutions, with many competing interests;
- Poor utilisation of resources since there is no funding formula and no proper planning oversight and monitoring;
- Inefficient use of resources, as depicted by high failure and dropout rates;
- Marope's findings on the Namibian situation were as follows:

- Decline in funding and limited funding sources;
- Use of resources was inefficient;
- Distribution of funding unequal.

Systems use historical bases for funding of universities. Another means of funding relies on formulas, under which earmarked funding and performance funding slot in. Non-budgetary investments make formulas much more complex, such as earmarked funding, competitive funding as well as capital funding. Most countries will use a mix of these models.

For a long time Namibia has not had a funding formula for allocating resources to HEIs, which has impacted on the system in different ways. With the development of the new funding framework, the question is to what extent the implementation of the framework will provide solutions to some of the challenges faced by higher education.

The study relied on desktop study methods for the preliminary data. The data acquisition approach was purposive. Once data was received, content analysis methods were used to draw conclusions. Content analysis yielded some descriptive data giving a detailed picture of the main higher education funding issues.

Key developmental indicators for Namibia, Botswana and Zambia were interrogated, namely:

- Human Development Index – Namibia is ranked at 129, Botswana at 119 and Zambia 163;
- Global Competitiveness Index – Namibia ranks at 92, Botswana ranks at 809 and Zambia at 123;
- Higher Education and Training ranking – Namibia ranks at 113, Botswana at 93 and Zambia at 138.

Looking at the financing of public education in Namibia during the period 2007 – 2012, the percentage of government expenditure as a percentage of GDP has increased from 27.5% in 2007 to 38.3% in 2012. The Education budget increased from 21.3% to 23.5%. The general education budget decreased over this period from 82.1% to 69%. Namibia spends only on average 7% on higher education, which is considerably less than spending in developed countries like Norway.

Over the period from 2005 to 2011, subsidies paid to the University of Namibia increased consistently compared to the funding given to the Polytechnic of Namibia. An analysis of cost per student between the two institutions also showed that the cost per student is of the highest among all countries on the continent, which is a worrying factor. On average there has been a 9% increase in tuition costs per year over the years from 2005 to 2011.

A process of developing a new funding formula was initiated through the Higher Education Act of Namibia, and two studies were commissioned. The Consortium for international Development in Education was tasked with reviewing the two studies in order to finalise the funding framework. After a series of iterations, the funding framework was approved by the Namibian government.

Elements of the funding formula include:

- Academic funds driven by the cost per NQF credit unit. The composite value is determined by the NQF field of learning offering type and the research component of postgraduate programmes;
- Performance funds, including:
  - Equity funds – students from disadvantaged groups and regions, and minorities;
  - Adequacy funds - directs the institution towards priority disciplines;
  - Internal efficiency funds – rewards improvements in success and dropout rates;

- External efficiency funds – rewards improvements in employability of graduates;
- Research outcomes fund – rewards research publications, patents, contract research, masters and PhDs completed.
- Capital funds to support infrastructural development
- Competitive funds (innovation funds) – institutions or academics access these funds on the basis of peer reviewed project proposals.
- The Ministry of Education is responsible for disbursing funds to the institutions.

Good practice in funding higher education was identified as follows:

- Financing practices to counter the decreasing funding of higher education;
- Efficiency and equity should be addressed through funding practices
- Cost sharing through the introduction of fees, but also availing loans through financial aid schemes
- Should link higher education planning to budgeting and enhance quality.

In general, the new funding framework meets many key requirements of a good funding framework because:

- It is a combination of operational budget, investment funds and competitive funds;
- It is unique in that it uses the NQF credit unit as its cost driver and reflects accurately the actual cost of core operations;
- It limits increases in student tuition fees;
- It drives good behaviour in institutions. The goals of government are achieved through incentivising throughput and student retention, and stimulating enrolment in priority fields. It provides equitable access to higher education and encourages research activity.
- Implementation of the formula by the NCHE allows for predictability and good management.

Is the funding formula a panacea for all higher education ills? Not at all. There are issues that require consideration, and these are:

- Determination of costs and credit units in various fields presents a challenge.
- The funding framework avails limited funding to private HEIs – future implications of this decision is not yet clear.
- Inefficiencies in the system have been over-emphasised. Simulation of the formula revealed that there will be savings in the budget for higher education.
- Although this is a good formula, has it taken into account the developmental state of the Namibian higher education system? Higher education needs huge investments for it to reach maturity.
- The cost per student in Namibia is very high (3<sup>rd</sup> highest in Africa) and although this cost is mediated by NSFAP, in the long run it might become a stumbling block to access.

The introduction of the new funding framework for higher education replaces a system that made subjective decisions about the allocation of funding and should therefore bring about improvements in the system. Nonetheless, the framework will require further refinement to take into account the developmental state of higher education in Namibia. There is also a need to augment the framework with mechanisms to address issues such as research funding. Furthermore there is a need to review the distribution of the education vote among all sectors of the education system.

## **2.4 DISCUSSION**

### **2.4.1** *Dr van Staden: What were the factors that contributed to the high cost per student? We know that in*

*SA the highest contributor to cost is the HR component. How do you create competitiveness in terms of funding? You used the NQF credits as the cost driver in Namibia; in SA, the policies are the drivers and a distributive model is used. South Africa is also moving more towards a development model, while Namibia appears to be doing it the other way round – could you comment on this?*

*Prof. Kgaphola: How, in light of what Prof. Tyobeka has said, could developing countries grapple with the chasm between basic literacy and higher education?*

Prof. Tyobeka: Of course we prefer education for all. The MDGs speak of benefits that accrued from pre-tertiary education, showing better returns on investment, although recent work has identified a lot of factors that were overlooked in terms of the return on investment resulting from higher education. Countries have to be strategic about how higher education should aim to achieve those MDGs, through putting together research and other programmes that could support government strategies.

What are the drivers for higher education cost in Namibia? Most studies identified inefficiencies. Namibia is a very small country, with a small number of people. Unlike a big system, we have focused on smaller classes, meaning higher salary bills. Yes indeed, there are inefficiencies, and perhaps working collaboratively could result in cost cutting.

In terms of competitive funding – they basically focus on projects related to teaching, research and community engagement. These are determined by government stakeholders. Under the circumstances, there are things that institutions may do alone, but nothing prevents collaboration among stakeholders.

It would be a bad thing if one developed a funding framework that did not respond to policy directives. This is the first layer one has to consider in determining the effectiveness of the funding framework. In our system, it is a combination of performance and efficiencies. Both demand and supply of higher education have to be taken into consideration. Based on the average cost within the country, we will assess the efficacy of our system.

The competitive funds that I mentioned will address the developmental component, and will stimulate actions that will develop the system.

*Prof. Nevuthalo: What you have not said is that developing states rely to a large extent on developed states. To what extent has the funding for education taken note of the costs related to sending students to study in other countries?*

*Question: You mentioned that student fees in Namibia are high, and that you have huge salary bills. You also mentioned that you aim to mitigate the high cost of student fees. How will your funding framework mitigate increasing student fees if the salary bill continues to increase? Namibia developed a funding framework to meet its needs as a developing country – is your staff salaries high compared to other institutions?*

*Question: Usually one of the aims of a funding framework is certain development. Do you rely on donor funding, where those donors may have their own agendas? Does this impact on development?*

Prof. Tyobeka: Like any other developing country, Namibia is a recipient of donor funding. In developing countries, there is always competition for donor funding. In some instances funding may be

pre-determined for a particular area.

You asked about the cost of sending students out of the country to be educated. Most of these students receive financial aid from the government. Because of the relationship between South Africa and Namibia, South Africa does absorb some of these students. Namibia has not really followed the example of Zimbabwe and Zambia to rapidly expand its higher education system – Namibia will gradually expand its higher education system, but it will also establish colleges to offer diplomas and certificates. The Polytechnic of Namibia offers B degrees, but they are quite applied. There is good articulation between the Polytechnic and the University of Namibia.

Indeed there are issues related to the funding formula. If you are going to have a permanent funding formula you will have trouble. It is important to constantly review and challenge the system to adapt to changing circumstances.

*Prof. Makhubela: You stated that the framework for funding of research has to be developed. What informs the decisions to finance research programmes?*

Prof. Tyobeka: It is necessary for each institution to prioritise how it will spend its allocated funding between the various core functions. It depends on whether research is viewed as an important part of the institution's agenda. Government's means of allocating grants is quite arbitrary at this stage, and a task team has just been established to develop a policy framework to support research. In addition to this, if you have interacted with institutions in Africa, they know how to access international grants. The Polytechnic, because of its German connections, have access to many German institutions and businesses. One has to be careful that you do not adopt the agenda of these donor organisations.

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3 OCTOBER 2013**

**1. PLENARY SESSION**

**THEME: TEACHING AND LEARNING**

**Chairperson: Prof. Mashupye Kgaphola, Vice-Chancellor and Principal, Mangosuthu University of Technology**

**1.1 KEYNOTE ADDRESS**

**BUILDING SOCIAL CAPITAL: STRATEGIES TO OVERCOME GRADUATE UNEMPLOYMENT IN THE WESTERN CAPE**

**Dr Andre Kraak, Education and Training Research Consultant**

**1.1.1** This presentation focuses on strategies to overcome graduate unemployment, in terms of which social capital was identified as an important element.

Definition of social capital:

- Social capital is that set of mutually supportive relations in communities and nations that facilitate cooperation and which often derive valuable collective and economic benefits to members.
- Middle class families have access to information and are often friends or family of the managers and owners of firms, and are more likely to influence the employment choices that young people make.

The results of the study aimed to determine the extent of graduate unemployment. On average 10.1% of graduates were unemployed two years after graduation, while CPUT graduates who remained unemployed was at 16%. 20 000 graduates of the 2010 cohort were targeted, across the entire range of programmes from certificates to degrees. 25% of graduates participated in the survey, which was a good result.

Key proxies for social capital include:

- Parental education;
- Type of school – private or public; what type of public school;
- Financing of university studies;
- Achievement scores in Grade 12 in mathematics;
- ‘Mature’ (previously employed) versus ‘first-time’ entrants into the labour market;
- Home province;
- Methods of job search;
- Institution, type of qualification and field of study.

All of these socio-economic factors imprint certain social capital ‘assets’ onto young people, which either assist or not in their transition through higher education into work.

Parental education is a key influence on whether children finish secondary school, gain admission to higher education and succeed. 38% and 36% of graduates at UCT and SU had a mother or female guardian with a university degree or higher, compared to only 15% at CPUT and 14% at UWC.

17% of the 2010 cohort attended private schooling, which is far above the national average of 7.3%. Enrolment at UCT of persons with private schooling was 35%.

29% of the CPUT graduates in the 2010 cohort funded their own studies. The second biggest source of income, for 27% of CPUT students, was from NSFAS. A third source of funding was bursary funding from private corporations and benefactors. If all types of bursaries are added together, this component comes to approximately 35%.

Unemployment increases from 5% to 15% when the mathematics symbol moves from A and B to C, D or lower. Young school leavers who have poor mathematics results still find employment, but it is harder for them.

18.6% of mature graduates are finding it hard to secure a job, while 69.2% of first-time students who graduate find it difficult to gain employment. This indicates that previous work experience is important.

Unemployment among African first-timers reached 20.2% on 1 September 2012, indicating that a poor schooling record does have far-reaching long-term effects.

In terms of job search behaviour, two important questions were asked, namely whether the job was secured through family or friends, and whether the company approached the applicant. Those who benefited from these two social assets totalled 19%, of which the total included 54% white respondents while only 17.8% were black. This indicates that these two methods are particularly strong.

Looking at unemployment based on the type of qualification, it emerged that 43% of all unemployed respondents (nearly 2 000 of the cohort) had certificates or diplomas. Another high number, 37%, were those who had attained Bachelors degrees. Looking at the unemployed African certificate and diploma holders, it emerged that the highest percentage of this group had qualifications in Science and Engineering, with the second highest group holding Education qualifications.

Having looked at these categories, the question is what should be done about graduate unemployment. There is little evidence of institutional responses to help graduates overcome unemployment. Institutional leadership appears to have surrendered to the indisputable logic of the market and unemployed graduates are left to fend for themselves. Institutional strategies to deal with graduate unemployment are both possible and necessary.

The important question is how this should be approached:

- Firstly, the results of graduate destination surveys (GDS) targeting recent graduate cohorts should be used to address the needs of current final-year students about to graduate and risk facing unemployment. By means of disaggregation and drilling down, GDS can provide a detailed profile of students likely to face unemployment after graduation.
- Secondly, universities can learn from a few innovative university schemes and from NGOs that have been working with unemployed students to help them gain employment.
- Such a drilling-down exercise, using each of the seven variables highlighted above, can be

undertaken with the 2013, 2014 and 2015 final year cohorts. The group of final year students can then be given appropriate levels of work socialisation support and training.

Two examples exist of universities that aimed to build their graduates' social capital.

- Example one: Wits University:
  - Wits set up a project in the early 2000s to deal with the employability problem of many humanities graduates and post-graduate students. The detailed qualitative study revolved around the transition to work of 10 participants – 5 post-graduate students from years 2005 and 2006 respectively.
  - Newcomer socialisation theories were used to reveal the institutional acculturation required to fit in at work and the psycho-social personality traits required to become employed.
  - The tacit and hidden components of work in industry were highlighted through mentoring and internships.

Example two: NGOs working with youth unemployment:

- NGOs are making a meaningful contribution to equipping unemployed youth for work. The critical element of their work is to build social capital.
- Many NGOs working in the field argue that young people do not have sufficient self-knowledge and autonomy, and do not know how to present themselves to prospective employers. NGOs work to help build self-confidence and self-esteem.
- NGOs boast that they have high success rates, but they generally work with small groups.
- Their methodology is based on creating structured pathways from training into work and aftercare. NGOs approach prospective employers for support to host short-term work experience internships and to recruit trainees for longer term employment.
- The transition to work for young people is a highly socialised process.
- After care, through mentoring and counselling are critical, NGOs play a critical role in aligning the expectations of employers and young employees.

All of this NGO work provides a key substitute or proxy for the valuable social networks which are absent in poor peoples' lives. Through these interventions, students are helped to build social capital. Universities can play a similar role for their at-risk graduates, and by so doing can reduce graduate unemployment at their institutions.

## 1.2 DISCUSSION

### 1.2.1 *Prof. Lortan: Was the time taken to complete the qualification taken into consideration?*

*Ms Puukka: On the basis of the work done for the OECD throughout the world, it seems that employability skills are embedded in the actual curriculum, such as negotiation, team work, and presentation skills. It is not only about ensuring that students and graduates find jobs, but also about ensuring that students are enabled to establish enterprises of their own.*

*Prof. Tyobeka: Considering that a number of unemployed graduates have certificates and diplomas, where does this place universities of technology and the structure of the qualifications that we offer? Do we need an intense interaction with employers to change perceptions about the quality of all the programmes that we offer?*

*Dr Grayson: Do you think that the findings of the study would deliver different results if the focus was on Gauteng rather than the Western Cape? You also alluded to developing a set of skills to prepare people for work – perhaps universities should incorporate this transition into the curriculum? Things like professional conduct come to mind.*

*Question: You spoke about the attitudinal change required from employers – what change in attitude is required? Was there different ways of mentoring students for the world of work?*

Dr Kraak: When CHEC commissioned the study we had many questions that could not be accommodated, such as the time taken to complete a programme of study. Remember this was a quantitative study. We also excluded the employment side, because that is another study. A third exclusion was throughput, because it is also material for a separate study. There might be a mathematical way to use the data to work this out. We looked at the time taken from graduation to finding a job. We found that the number of unemployed with certificates and diplomas do not reduce after two years, which is the case with graduates with Bachelor's degrees.

I agree with the comments about the OECD – only 2% of these graduates were self-employed. In a separate study by Prof. van den Berg of SU, he investigated graduate unemployment where the self-employed numbers are somewhat higher at 15%, taken over the population as a whole.

There is definitely an issue around the status of certificates and diplomas, which will require some active work to address prejudices. In the old days there was a structured pathway for white apprentices, and we have lost this conduit for graduates – these partnerships and commitments with industry have to be built. Phasing out intermediate qualifications may be a mistake. Polytechnics are experiencing a phenomenal renewal worldwide in many developed countries; many of these countries launched polytechnics at the time when our country phased out our Technikons.

I do agree that the Western Cape is privileged in many respects, and that the unemployment numbers may be higher in other parts of the country. It would be good do such a study elsewhere.

We did not talk to employers, so the comments that I made about social capital emerged from other work. I think that social compacts could help to change perceptions. I think we all could work together to change these negative realities.

#### **SUB-THEME: TECHNOLOGY-ASSISTED LEARNING**

### **1.3 USING APPRAISAL THEORY TO UNRAVEL STUDENTS' VOICE: FACEBOOK'S COMPLEMENTATION OF WRITING CENTRES**

**Dr Patient Rambe, Post-doctoral Research Fellow, Department of Computer Science and Informatics, University of the Free State**

**Prof. Crispin Chipunza, Research Manager, Faculty of Management Sciences, Central University of Technology**

#### **1.3.1 Paper was not delivered.**

#### **SUB-THEME: PROFESSIONAL EDUCATION**

#### **1.4 FEEDBACK AS CRITICAL FACTOR IN IMPROVING PROFESSIONAL DEVELOPMENT IN ASSESSMENT PRACTICES**

**Mr Heinrich Collen van der Watt, Curriculum Development Practitioner, Directorate: Curriculum Development and Support, Tshwane University of Technology**

**Mr Eric Matshete Chweu, Curriculum Development Practitioner, Directorate: Curriculum Development and Support, Tshwane University of Technology**

**Dr Cecilia Jacomina Louw, Curriculum Development Practitioner, Directorate: Curriculum Development and Support, Tshwane University of Technology**

**1.4.1** Countrywide we are talking about increasing graduate throughput. We have to understand what this concept means, and what its impact is. Higher education institutions are under pressure to provide evidence of accountability through a strong focus on assessment of learners' progress and success (Freeman and Kochan, 2012:2). The paper was further prompted by the statement that lecturers are not trained in teaching and learning or assessment. The purpose was to document what participants in a short learning programme on assessment considered to be of most value, and to determine what professional development opportunities with regard to teaching and learning could be provided.

Professional development in assessment at TUT incorporates a range of issues, including assessment criteria, level descriptors, integrated assessment, etc. Lecturers were offered the opportunity at the end of each day to provide feedback on the learning programme, and were requested to make recommendations that could improve the programme. The focus of the study was on the elements of the programme that participants considered most useful. 51 participants took part in the study; on average 80% of participants completed the forms.

Results of the study focused on the most useful elements of the short learning programme, because few respondents came up with recommendations on how the programme could be improved. The issues that received the most feedback included:

- Assessment methods and instruments - respondents indicated that only the basics are addressed, and that they needed more in-depth training on these aspects.
- Bloom's taxonomy and level descriptors – these are used as a point of departure, applied in terms of level descriptors. It was recommended that training regarding cognitive levels and level descriptors should be provided before somebody attends an assessment training programme.
- Constructive alignment – exposure to constructive alignment as a teaching and learning principle before the assessment course was highlighted as a necessity.
- Feedback on assessment – more practical skills or techniques would be required. The use of feedback was a great eye opener.
- Learning outcomes and assessment criteria – exposure to curriculum development will ensure that participants will understand where outcomes and criteria originate from. Problems are vested in the construction of the study guide, where outcomes, assessment criteria and learning activities are provided as a point of departure.
- Assessment principles – to be dealt with in more detail, providing some statistical methods to analyse distribution curves of marks, for example.
- Moderation – separate interventions are required specifically for moderators.

In conclusion, the study identified that it would be necessary to provide a structured, holistic pathway for development, since most participants indicated that their prior knowledge on curriculum development and teaching was lacking. Skills and knowledge required for assessment are

underestimated, and some themes should be addressed in greater depth. More in-depth specialist interventions on rubrics and moderation will be required. The adage: 'Assessment drives learning' holds true.

## **1.5 DISCUSSION**

**1.5.1** *Prof. Moutlana: There are usually two concepts that have to be kept in mind, namely curriculum development and professional development. We often forget the fact that the student population is becoming more diversified, and that our teaching and assessment practices have to keep up.*

Mr van der Watt: Sometimes we do treat our lecturers with less respect than they deserve. We need to anticipate these new requirements that our students have and provide the support to our lecturers to adopt those skills. Social media means that students want to engage in more discussion instead of being told what they should do. We need to support our staff with the teaching skills that they need.

*Comment: It might be helpful to also get responses from the students on the efficacy of the training on assessment and other aspects provided to your lecturing staff.*

Hein van der Watt: That is true; we will take this into account.

*Fessler, CPUT: Could you give us some advice on the purpose of assessment, which is to determine individual competence of the student. Qualifications are personal achievements. We have done some work on the weightings of assessment types and certain types of assessment tools that require group work. Feedback is also often used to calculate the final mark or achievement. Have you considered the types of assessment that will determine the student's completion of the qualification?*

Hein van der Watt: If we look at graduate attributes, I agree that in the final determination of whether the qualification should be attained group work cannot be the determinant. Traditionally we have the norm of a final assessment exam. We often ask the question whether this final assessment is really adequate to determine whether a student has actually learnt something. I do not think that group work can be the only determining factor.

*DUT: I have a comment relating to what I have observed – we do a lot of academic development in our institution focusing on teaching teachers how to teach or assess, but we do not close the loop. We do not get to implementation in the classroom and the impact on student learning. As a country, we have to close this loop in our higher education institutions.*

Van der Watt: I agree, that is one of the priorities of our unit – we do want to assess the impact of our interventions.

## **2. PARALLEL SESSION 2**

### **SUB-THEME: WORK-INTEGRATED LEARNING**

**Chairperson: Prof. Anthony Staak, Cape Peninsula University of Technology**

### **2.1 CO-OPERATIVE EDUCATION AT THE TSHWANE UNIVERSITY OF TECHNOLOGY: A NEW DIRECTION FOR WORK-INTEGRATED LEARNING AND EMPLOYABILITY**

**Dr Marius Wessels, Director: Cooperative Education, Tshwane University of Technology**

### 2.1.1

Dr Wessels presented the new strategy and management structure of Co-operative Education at TUT  
Dr Wessels explained the aim of the research as follows:

- To develop a new strategy and management structure for Co-operative Education and TUT and to present a new direction in Co-operative Education for TUT.
- The outcome of a two year engagement process with internal and external role players.
- To identify and address deficiencies in Co-Operative-Education.
- The model was tested for a five year period in terms of output and delivery.
- The research contributes to other universities in South Africa
- WIL is an important niche for UoTs but the management and administration remains a challenge.

Dr Wessels explained the research methodology, the findings and discussions on the strategy and structure and the findings benchmarking (Employability) (*See presentation*)

He also alluded on the Governance of Co-operative Education, the Faculty Structure in terms of WIL, the DCE structure and the Faculty Co-operative Education Centre (*See presentation*)

## 2.2 DISCUSSION

### 2.2.1 *Question: What is the extent of the innovation element within work-integrated learning?*

Dr Wessels: WIL was an administrative function in the past, where students were placed in the work place for experiential learning purposes. Innovative thinking and a re-focusing will be required in terms of WIL in the future. There is a lot of potential and capabilities in the curricula of various programmes for innovation.

*Question: To what degree did the relationship with JICA influence the decision to take on employability staff?*

Dr Wessels: The decision to take on employability staff was based on research and not based on JICA.

*Question: What was the link between the central WIL office and the faculties and how is that link managed to avoid the old theme of people working in silos?*

Dr Wessels: The governance structure model that had been presented supported the engagement and communication between the various levels.

*Question: Is the Associate Dean responsible for WIL in faculties solely responsible for WIL or will he/she be responsible for other tasks as well?*

DVC: TLT of TUT: The Associate Dean responsible for WIL will have only one function.

*Question: How is the WIL success rate defined?*

Dr Wessels: There are different definitions for success rate, namely success rates, graduation rates, etc., each with their own formulas. The WIL success rate refers to those students who were registered for WIL and who have passed.

*Question: Should the entire public higher education system be revisited? How does feedback from industry (employers) influence teaching and learning and the curriculum outside of the classroom.*

Dr Wessels: Advisory Committees are important role players in terms of the internal/external relationship. The Advisory Committees know what is required in industry and give their input on the curriculum design of a programme to comply with the needs of industry. The research that had been conducted was qualitative as well as quantitative, based on a combination of surveys and interviews. Co-operative Education literature recommends the use of mixed methods.

**2.3 COMMUNITY ENGAGEMENT THROUGH ACTION LEARNING: A VEHICLE FOR STUDENT DEVELOPMENT**  
**Ms Jacqueline Scheepers, Manager: Service Learning Unit, Community Engagement and Work-Integrated Learning Centre, Cape Peninsula University of Technology**  
**Prof. Joyce Nothemba Nduna, Director of Community Engagement and Work-Integrated Learning, Cape Peninsula University of Technology**

**2.3.1** Ms Scheepers' presentation highlighting the following:

- The importance of learning by doing (i.e. action learning);
- Community engagement through action learning relates to service learning;
- Service learning contributes to the holistic development of students when they are provided with opportunities to reflect on their service learning experiences.

Ms Scheepers explained that the CPUT WIL office has close links with the Technology Transfer office; when Service Learning projects link to innovation the projects generally evolve differently. The question should be asked where innovation originates, and whether it is a collaborative effort with industry.

CPUT established a multi-disciplinary, integrated team working on a sustainable livelihoods project. There is some innovation but one of the challenges was not to introduce technology into a community context before the community was ready to adopt the technology. Technology that has not yet been tested creates expectations the institution cannot meet.

All CPUT WIL Coordinators have full-time, senior positions. The extent of teaching by WIL Coordinators is in the work-preparedness programme and also in the assessment of the actual projects that the students embark on in industry. Service learning is integrated into the curriculum and accredited. The Service Learning Unit works closely with academic staff and industry partners in this regard.

**3. PARALLEL SESSION 3**  
**SUB-THEME: E-LEARNING**  
**Chairperson: Prof. Ansu Erasmus, Tshwane University of Technology**

**3.1 E-LEARNING AT UNIVERSITIES OF TECHNOLOGY - OUR STRENGTH FOR OUR FUTURE**  
**Mr Johan Badenhorst, Director: E-Learning and Educational Technology, Centre for E-Learning and Educational Technology, Central University Of Technology, Free State**

- 3.1.1** Mr Badenhorst indicated that the e-learning project is still in progress, and discussed the following topics: Benchmarking, Benchmarking e-Learning, SILSTI dimensions and a new perspective.

Benchmarking is done to identify best practice, looking at what other institutions are doing well and following their example. Management information is used for strategic management to evaluate best practices and manage quality, time and cost.

A few benchmarking models were discussed, i.e.: ACODE, EMM (e-maturity model), Pick & Mix, HELAM and Sun *et al.* This addressed students, instructors, learning design, support, and the technology environment.

Added to the above, is the Iron Triangle for Higher Education, which depicts quality, access and cost.

Results of an open-ended questionnaire to record experience of UOT's were discussed.

## **3.2 DISCUSSION**

- 3.2.1** *Question: What progress has been made in relation to e-Learning?*

Badenhorst: Currently it is in different phases of development. Talks on a generic e-learning strategy/policy within TLT groups are taking place as well as the development of a certified qualification for higher education lecturers.

## **3.3 E-ASSESSMENT AS CONTRIBUTOR TO STUDENTS' LEARNING IN MECHANICAL ENGINEERING** **Mr Nico Basson, Instructional Designer, Directorate: Teaching and Learning with Technology, Tshwane University of Technology** **Mr Carel Hancke, Senior Lecturer, Faculty of Engineering and the Built Environment: Mechanical Engineering, Tshwane University of Technology**

- 3.3.1** The project was initiated to determine students' experiences and expectations with e-assessment in an engineering field.

Descriptive case study: a mixed method approach was adopted, using quantitative data supported by qualitative responses. The focus of the study was on assessment for learning. 160 students were assessed through paper-based as well as e-assessment for continuous evaluation. E-assessment was done on Blackboard. Research objectives from Demo (2009) and Tolentino (2010) were used in the project. Testing was done on the Likert scale with open-ended questionnaires. The results of the questionnaires were discussed and explained.

The conclusion is that there is a place for e-assessment in the Engineering environment, although further development will be required.

## **3.4 DISCUSSION**

- 3.4.1** *Question: In terms of performance within subjects, what was the success rate when you changed from traditional assessment methods to e-assessment?*

Response: There was no substantial change, it was about the same.

*Question: During the presentation, you said you will have a different perspective towards the end. I am not sure that this is the case. Is there any way of comparing and benchmarking findings?*

Response: Not at the moment. In this study we will look at all UOT's. Some have just progressed further with implementation than others.

*Question: I am quite disappointed with the use of technology in Universities. What are the main blockage barriers?*

Response: UOT's are on the same level; this is only a perception, and not a proven fact. Lack of support is a critical issue, and cost (LMS, access, wireless) does play a role. Technically, enough expertise is available.

*Question: It is a nice-to-have, but for assessment to work it has to be a positive experience for lecturers. E-assessment becomes quite a burden. Are you happy with the system?*

Response: It is like sowing and reaping. We're still sowing. The time used is incredible and we hope to reap someday.

*Question: Considering that your feedback was only on marks, I am not surprised that there was no difference between hand-written and e-assessment.*

Response: It can be developed.

*Question: Were the respondents in your research mainly the people from the e-Learning department?*

Response: It was mainly the staff from our University.

*Question: Could you share your experience in terms of controlling the results? What is your experience of students working at home?*

Response: On the first assessment they could write anywhere. It is controlled, and the second is a normal test.

*Question: Cell phones present a problem because they change the control in the environment. Is it necessary to consider being more on guard?*

Response: We simply control it with an attendance list.

*Comment: Computer access in the faculty is under-estimated; it nearly caused a student revolt. Labs with 2000 computers to provide each student access are hugely neglected and very costly.*

**4. PARALLEL SESSION 4**  
**SUB-THEME: STUDENT-CENTERED LEARNING**  
**Chairperson: Mr Sakkie Smit**

**4.1 A SELF STUDY OF A STUDENT-CENTRED APPROACH TO ACCOUNTING DIDACTIC TEACHING**

**Mrs Anita Hiralaal, Lecturer/Programme Co-ordinator, School of Education, Durban University of Technology**

**4.1.1** As a teacher educator of Accounting Didactics to student teachers at DUT, I became aware of discrepancies between student teachers' academic performance in tests and examinations of the Accounting theory and their practical application of this theory in the classroom.

Student-centred learning focused on how students learn rather than what they learn. Learning is a process of knowledge construction that requires the student to be actively involved in the learning process. Student-centred learning was much more than just engaging students in some group activities. A model where students are at the centre of the learning process rather than one where the lecturer is the "meddler in the middle" should be followed.

The idea of teacher and students as co-creators of value is compelling, rather than one in which teachers deliver an information product to be consumed by students.

Departing from this notion, I developed my own teaching philosophies instead of emulating others. Discussions with students took place, followed by development of papers and lists of metaphors. Students were given freedom of choice. By being involved in the process personally, students saw me in a different light. After discussion of student-centeredness, students experienced a sense of freedom in class and did not feel pressurised to learn chunks of notes for Accounting Didactics.

Results revealed that student-centred teaching and learning is not simply a teaching technique or strategy but a philosophical paradigm that has to be informed and consistently applied.

**4.2 DISCUSSION**

**4.2.1** *Question: There are a high number of students who fail Accounting and cannot graduate. What can be done to address the problem? It is a concern that students did not have Accounting in matric.*

Mrs Hiralaal: A student centered approach as well as e-learning could be used to assist students.

*Comment: Students never have the opportunity to write a narrative of what they are doing. They should have an opportunity to write a story, to obtain a conclusion at the end. Once students get in the habit to justify their actions all of a sudden Accounting makes sense.*

*Comment: In my experience students who did not have Accounting in matric perform better than those who did. At university level they focus more on the analysing factor, which one can train them to do.*

*Question: How do you address poor student results in Accounting?*

Mrs Hiralaal: It is necessary to review the retention of concepts. The intention is to look at the impact of performance. The ideal would be to give a 10-15 minutes lecture and thereafter to employ the flipped method in which students were asked what to do. It is also helpful to give an opportunity for a 10 minutes re-cap of the main concepts discussed and then to allow for discussion. It is important for students to follow own-path learning.

**4.3 FLIPPING THE CLASSROOM COMPARED TO THE LECTURE METHOD: STUDENTS' AND LECTURERS'**

## PERCEPTIONS

**Dr Eunice Ivala, Coordinator, Educational Technology Unit, Fundani Centre for Higher Education and Development, Cape Peninsula University of Technology**

**Mr Anton Thiart, Lecturer Civil Engineering, Faculty of Engineering, Department of Civil Engineering, Cape Peninsula University of Technology**

**Mrs Daniela Gachago, Lecturer Educational Technology Unit, Fundani Centre for Higher Education and Development, Cape Peninsula University of Technology**

**4.3.1** This paper presents students' and lecturers' perceptions of benefits and challenges of the ICM of delivering instruction opposed to the lecture method in a third-year hydrology course in the Civil Engineering Field at CPUT.

The rationale of the research is that most HEIs globally continue to use the lecture method in delivering instruction. Problems with lecturing are based on incorrect assumptions about how people learn. Research shows that the lecture method is relatively ineffective in promoting deep learning and often promotes surface learning.

Flipped or inverted classroom methods were introduced where lecturers instructs lessons at home. Criticism for the flipped classroom method showed potential for making university classrooms more interactive, inclusive and effective and can be applied in many disciplines.

Both quantitative and qualitative approaches were used, to ensure that limitations of one type of data were balanced by the strengths of another.

Focused on three themes:

- Student's perceptions of the benefits if ICM for curriculum delivery compared to the lecture method;
- Lecturers' perceptions on the ICM for curriculum delivery compared to the lecture method;
- Challenges encountered in implementation of the ICM and critical conditions for ensuring successful implementation.

A more learner-centred approach of co-operative learning will yield even better results if used in implementation of the ICM.

Findings showed that "inverting" or "flipping" and moving the lecture to the homework domain and saving application and one-on-one or group work for the classroom experience makes the ICM model more productive than the lecture method.

## 4.4 DISCUSSION

**4.4.1** *Question: In your last statement you mentioned that you teach the students the way you learn. How do you teach them the way you learn? How do you determine learning styles?*

Dr Ivala: The students were interviewed on how they wanted the flipped classroom method to be applied. Both the flip method and lecturer approach should be used, particularly for students who lack self-learning skills.

*Question: At institutional level, to what extent is teaching valued and acknowledged?*

Dr Ivala: The core business of the university is teaching and learning, as well as research. It is therefore necessary to employ people committed to the university in order to promote teaching and learning. However, there are no incentives for lecturers. Teaching Development Grants should be used to fund subjects at risk, for example to purchase equipment required. Good materials are also available on YouTube.

*Question: What effect does the ICM method have in large classes – will it be as effective?*

Dr Ivala: The experience was that if you teach more than 50 students, tutors need to be appointed to assist.

*Question: To what extent are lecturers employed for their disciplinary knowledge capacitated in terms of teaching and learning? Does the university make provision for this aspect?*

Dr Ivala: We have a teaching development programme, but it is non-credit bearing. If someone is employed, they should go through the induction programme. There is also support to employ practitioners in the programmes.

Dr Smit: Excellence in teaching needs to be illustrated to improve professionalism.

*Question: Do lecturers make use of Dropbox?*

Dr Ivala: Most lecturers make use of Dropbox. If a file is too large, they would make use of the intranet.

## **5. PLENARY SESSION**

### **THEME: RESEARCH, INNOVATION AND DEVELOPMENT**

**Chairperson: Prof. Irene Moutlana, Vice-Chancellor and Principal, Vaal University of Technology**

### **5.1 TOUCH TECHNOLOGY PRESENTATION**

**SHARP Electronics – Official Sponsor of all electronic equipment for the Conference**

**Ms Lynne Price**

- 5.1.1** Ms Price provided an overview of SHARP electronics products. SHARP has decided to increase its current market placement (currently at 11<sup>th</sup> place) in South Africa, for which a targeted, aggressive marketing plan was adopted. The company has branches in most of the provinces of the country. Clients include the SA Government, municipalities, ESKOM and ACSA.

SHARP is confident of the fact that it can be a valuable partner to all education institutions in South Africa. Delegates were invited to address any questions about SHARP's technology offerings to the representatives of the company during the lunch break.

### **5.2 KEYNOTE ADDRESS**

#### **MEASURING RESEARCH PERFORMANCE AT SOUTH AFRICAN UNIVERSITIES: CONTEXT, TRENDS AND CONSEQUENCES**

**Prof. Johann Mouton, Professor in and Director of the Centre for Research on Evaluation, Science and Technology, Stellenbosch University and the African Doctoral Academy Project**

### 5.2.1 The issue of research performance at South African universities is hugely topical.

Research in any system is shaped by various factors. At least three are important, namely:

- The material conditions,
- National and institutional research missions and capabilities, and
- Knowledge policies (national/systemic/ institutional), strategies and plans that shape and steer research and development.

The material conditions of research include:

- Our geography – clear skies drive our focus on astronomy and astrophysics;
- Our biodiversity explains our comparative strengths in fields like ornithology, botany, marine biology and the ecological sciences;
- Mineral resources led to expertise in mining engineering and physical geology;
- Our African origins explain the long and significant production of knowledge in palaeontology and archaeology;
- South Africa has been and continues to be seen as a laboratory of diseases;
- Multi-culturalism and recent political history influenced scholarship.

Science was historically driven by science missions who coincided with specific national and international socio-political events. In the 18<sup>th</sup> and 19<sup>th</sup> centuries there were many amateur scientists driven by curiosity. In the 19<sup>th</sup> and 20<sup>th</sup> centuries, there was a drive to solving problems in areas of social, industrial and health. In the mid-1900s, sciences started developing knowledge in the national interest. Science was employed in the defence of the apartheid state, with military and energy research. This led to research in the critical social sciences, investigating new societies and new institutions. Post 1994, science for innovation was introduced.

Policies are high level and long-term normative statements of desired end-states for research in the country. These have different levels of impact and often have unintended consequences. The first science policy known in South Africa goes back to 1982. In 1987 the then Department of Education introduced a research subsidy scheme, followed by the FRD rating system. This led to the introduction of a range of other policies throughout the 1990s and the early 2000s, with the most recent being the National Development Plan that was introduced in 2012.

These policies speak to different dimensions of research, including:

- The nature of research – basic, applied, strategic, Mode 1 and Mode 2. Steering research production into more collaborative industry-linked research was done through THRIP and Innovation Fund grants.
- The quality of research, with an emphasis on quality assurance systems and processes, such as HEQC audits, Assaf Journal Reviews and NRF Rating.
- The shape of research (scientific field distribution) with greater emphasis on research in SET, prioritising IKS, space science and astronomy, among others.
- Volume of research – magnitude of outputs – increasing the volume of research outputs;
- Research efficiency or productivity – it is not clear whether policies have managed to increase individual and institutional productivity.
- Research collaboration both nationally and internationally;
- Visibility and international impact – the extent to which research in SA is more visible and

recognised and cited internationally.

- The transformation of research – the extent to which more female and black scientists and scholars participate in research production, i.e. whether we have expanded the human capital base of research.

Trends were identified in terms of some of these policy initiatives:

SA has 23 universities at present, all producing research outputs. Since the introduction of the national research subsidy, the situation has remained fairly stagnant until 2003, when the total publication output started increasing rapidly with output increasing from an average of 5 500 outputs to approximately 11 000 in 2011. There are multiple explanations for this increase, with the most plausible being that money was the most persuasive driver. A new funding framework was introduced in 2003, earning universities R 77 000 per research paper in 2004, and R 120 000 in 2011. The DHET did not prescribe how universities should allocate research funding within the institution. UoTs demonstrated the same trend of increasing research outputs over the years from 1991 to 2011 compared to traditional universities. Weighted research output has also increased over the years 2005 to 2011.

An investigation into the shape of knowledge production (the distribution of articles by main fields of science) shows that UNISA focuses on the Humanities and Social Sciences, followed by UWC, NWU, UFH and UFS (where the output in health sciences has halved over the past five years). UCT has the biggest health sciences faculty in the country, followed by Natural Sciences, Engineering and Humanities and Social Sciences. The historically advantaged universities are strongest in areas like Theology and Law.

Looking at the distribution of articles by journal index, only certain international journal indices are recognised by the DHET. The bulk of the UP Sciences faculties' publications over the years 2005 to 2010 were published in Web of Science (WoS) journals. In the Humanities, 30% of papers produced by UP appeared in journals that were not reflected in international ranking systems. It is therefore essential for universities to understand that rankings are influenced by the number of publications in internationally recognised journals. The shape of knowledge production has a major impact on how research output is measured.

Research productivity measures are interesting to keep in mind. The top universities are expected to produce 1.41 research outputs per researcher per year. At UFS, the average academic staff member produced 2.73 papers over the last six years. The focus on research productivity has led to a situation where universities are headhunting researchers that have proven their productivity. The most productive faculties generally are Law, Humanities and Theology, because there are more journals in which to publish.

It is also useful to note that the top 10% of research outputs at UFS were produced by 9 individuals, producing approximately 5.6 papers per year. It is often the case that up to 40% of staff members produces no research outputs.

A comparison of Wits, UCT and UKZN in terms of research productivity over a period of 15 years showed that most of these institutions have created a critical mass of research productivity in areas where it would have the most impact.

Investigating the impact factor of the journals in which universities choose to publish showed that

journals published locally or journals that have no ISI ranking do not have the desired impact. A comparison of UFS versus UCT showed that UCT's research rankings are as high because the institution chooses to publish in recognised international journals. The majority of UCT's publications are in foreign ISI journals, which increases the impact of its research outputs.

In terms of the demographics of research, UCT managed between 1990 and 2011 to increase the number of female authors from 15% to 30%, although the gender balance between male and female staff is about equal. An interesting phenomenon at most South African universities is that most of the productive black researchers are not local black South African citizens, but foreign nationals. At UFS, when research output is assessed per faculty, it emerges that the majority of researchers in Law and Theology are male, while females dominated in Education (60%) and Health Sciences.

Age distribution at University of Pretoria shows that half of the research output is being produced by an ageing cohort, and that the number of young researchers is declining gradually. Most of the research is also produced in the faculties of Law and Theology at UP.

Consequences of the trends include:

It is clear from the data that South Africa has increased its research output over the past few years. It is necessary to be clear about who sets the agenda for research, to prevent a homogenisation of demand. There is an increase in 'research surveillance' at all levels. The funding system has also led to certain non-virtuous research practices, such as:

- Chasing numbers:
  - Salami publishing – cutting one paper into several to increase the subsidy,
  - The involvement of incidental guest visitors or visiting professors with tenuous links to local universities as co-authors,
  - Students are required to publish from their theses, sometimes at all costs;
- Unethical practices such as
  - Self-plagiarism;
  - Co-authorship issues such as insistence on recognition; and
  - Protectionist publishing in in-house journals.

Research performance is a function of a multitude of factors and forces. Policies are put in place to achieve different objectives ranging from strengthening to steering. South Africa has seen growth in research outputs, but there are also cases of academics manipulating the system in an unethical fashion. It is necessary to balance output and ethics in research output.

## 5.3 DISCUSSION

**5.3.1** *Prof. Tyobeka: Universities are classified into different categories. Post-94, we have only seen one institution moving up the ranks. Is this kind of typology fixing institutions permanently into different categories, or will the system allow migration from one level to the next?*

*Ms Puukka: The presentation highlighted the rankings, and also the consequences of the increased focus on rankings. Is there a discussion of how the ranking system influences the practices at institutions?*

*Question: My university is very generous with its incentives, but these do not increase personal salaries. I think it is perhaps healthy to have staff members producing at different levels. I am quite freaked out*

*by the information about which journals institutions choose to publish in. I think one should also look at the UK system where publications count over a period of 5 years.*

*Prof. Grayson: You showed how people subvert the purpose of research, which is to produce knowledge. There are institutions where staff is encouraged to publish hard, discipline-based stuff, but we also need to recognise that people need to research their teaching practice.*

*Prof. Nhlapo: Can the system really process and use the massive research output to influence policy and benefit the public?*

Prof. Mouton: The first two questions are related. The DHET uses a cluster model to distinguish between universities in terms of research. Any research framework can never rely only on two or three indicators. The DHET takes essentially six indicators – articles, chapters in books, etc. – to determine output. When they use the normed output, they divide the weighted research output by the fulltime equivalent staff at universities to arrive at research output. This ranking does not take into account that research is produced by post-docs and postgraduate students. If you have a ranking system using indicators that are wrongly calculated, you have skewed rankings. One has to disaggregate between different research outputs such as articles and books, or the supervision of a doctoral student. We are working on developing a system of new research output indicators, which will also look at teaching and learning and throughput and completion rates.

I also think it is fair to say that we have broad-ranging discussions about universities in South Africa and the rankings systems. None of the international ranking systems take into account local scientific production, which they do for Europe and America. The problem is that African science is not visible in international journals. Our scientific production is under-estimated internationally. This leads to a situation where people look only at the web-based rankings, which says nothing about our research practice and output because the indicators are questionable and manipulated.

The thing about staff and productivity is that it is linked to the Pareto principle. This has a major implication for strategic planning – if somebody thinks that every staff member will be research productive, they are misguided, because not even the top world-wide universities manage this. It is important to look after the most productive researchers, without discriminating against young scholars. Directors of Research have to ensure that they have differentiated research plans for different faculties, because science is practiced differently across different fields of science.

The strange thing about our funding system is that it actually discourages collaboration. If a single author publishes a paper, the university gets R 120 000. If researchers collaborate internationally, you get only half of the subsidy, and the other institution gets nothing. We have managed to improve our research output despite the funding system. Not only does the funding system only encourage discipline based research, it also discourages linkages between research and community engagement. I think one cannot expect the government, through policies and frameworks, to stimulate the kind of research we want; that will depend on the universities themselves through rewards and incentives. We have no awareness as yet of research uptake and impact – there are multiple ways that research finds its way into policy and practice, but it is not as easy to measure.

**6. PARALLEL SESSION 1  
SUB-THEME: UNIVERSITIES OF TECHNOLOGY: HUMAN RESOURCES AND CAPACITY DEVELOPMENT**

## **6.1 A RESEARCH AND MANAGEMENT MODEL IN SUPPORT OF RESEARCH DEVELOPMENT** **Prof. Laetus OK Lategan, Dean: Research and Innovation, Central University of Technology**

### **6.1.1** Universities can be busy with many ideas, and have good statistics, but are they really growing their knowledge base?

Principles behind the management model:

- The university as a community of scholars;
- Spin in and spin out of ideas;
- Three mission statements of the university;
- Broader agendas dictated by different stakeholders;
- Different problems and ideas, theoretical and practical solutions.

Managing research plans:

- Research clusters, supported by research plans on a rolling basis;
- The plan is based on a multi-focused approach to capacity development, developing different skills.

Research management model:

- Human skills and potential development;
- Intellectual skills development;
- Structural development;
- Policy development;
- Resources;

People should be in the middle, and should be stimulated to take charge of their own development, and provided with structural and policy support and the required resources.

Performance indicators for research and development were developed, including:

- Input indicators – staff, students and budget available in the system;
- Process indicators – training, conferences, internal funding;
- Output indicators – numerical results – number of qualifications, publications and grants awarded;
- Outcome indicators – overall results – completed projects, growing of international footprint and qualification mix;
- Impact indicators – commercialisation, citations, rated researchers, development of new policies and social change.

The focus of all research and development is to result in tangible outputs, outcomes and impact. The research value chain should integrate research, technology transfer and innovation. The broader impact for the institution should be discernible at all these levels.

## **6.2 KEY FAVOURABLE CONDITIONS FOR CAPACITY DEVELOPMENT: A CPUT CASE** **Dr Chris Nhlapo, DVC: Research, Technology, Innovation and Partnerships, Cape Peninsula University of Technology**

### **6.2.1** CPUT aims to build a university that is at the heart of technology education and innovation in Africa. Various policy interventions across the institution have been developed to support this mission statement. A ten-year strategic plan for research and innovation has been developed. Since 2008, CPUT's research performance and postgraduate training has shown an upward trend.

A new norm has been set, and it will be necessary to ensure that the second phase of the strategy maintains the momentum. The National Development Plan was used to inform the CPUT plan for the second phase. In 2008/9 a thorough institutional audit or review of research entities and activities was conducted. Technology transfer offices were established, and new policies were developed to address existing gaps. Intellectual property policies and IPR strategy management followed.

In 2010, collaborative research and internationalisation were identified as priorities, followed by the Erasmus Mundus programme. In 2011, the focus was on stakeholder engagement, and the commencement of a 10-year RTI strategy. The institution further determined that it wanted not only a plan for research, but wanted to strengthen uptake and implementation.

In 2012, the 10-year RTI and research uptake were launched. TTO was established as a holding company. Identifying and working towards Cape Town as the World Design Capital 2014 forms part of the process.

Seven research focus areas were adopted after the audit process, including bio-economy and biotechnology, space science and technology, among others. The challenge is opening up the research base to increase participation in the research enterprise. Planning for 2014 has already been undertaken, and facilitators have been appointed to ensure that all proposals are in place. The CPUT Technology Transfer office is very successful in commercialising patents and products.

A Research Uptake Management strategy (RUM) was developed to limit ad hoc interventions, but to create a holistic approach that will bring about a paradigm shift in terms of culture, attitude and practice.

The scoping exercise relies on clear design principles, including planning, implementation, budgeting and legacy issues. CPUT looks at the epistemological foundation of design, and focuses strongly on design as a social practice with the aim of reconciling the objective and the subjective. A modular approach will be followed to get designs to market.

CPUT is making good progress in terms of research and commercialisation of chemical and space engineering, and in terms of medical supplements.

### **6.3 CREATING AN ENABLING RESEARCH ENVIRONMENT – A CASE STUDY OF THE DURBAN UNIVERSITY OF TECHNOLOGY**

**Prof. Kevin Duffy, Director, Institute for Systems Science, Durban University of Technology**

**Prof. Sibusiso Moyo, Director, Research and Postgraduate Support, Durban University of Technology**

#### **6.3.1** Planning is necessary to create an enabling research environment. As noted earlier in Prof. Mouton's presentation, there are various issues affecting output such as human capacity, infrastructure and funding.

Productivity (average number of papers per permanent academic staff member) shows that any institution's ability to be research productive relies on staff with PhD qualifications. Because of this, DUT has identified the need to increase the number of staff with PhDs, for which a number of interventions and support mechanisms have been put in place. Faculties are supported in their research plans. Improved staff qualifications have a domino effect on other important research

indicators. Not enough postgraduate students were enrolled, for which a specific intervention was introduced – writing workshops are provided to students, help is provided to handle data and do data analysis. DUT is working towards being a locally relevant research university. DUT is building new engineering laboratories, and is fostering international as well as local partnerships.

Looking at which universities are performing better given the capital invested in them, it appears that UoTs are faring quite well when compared to their competitors.

#### **6.4 REFLECTIONS ON RESEARCH DEVELOPMENT: MUT CASE STUDY**

**Prof. Sandiso Ngcobo, Research Chair, Faculty of Management Sciences, Mangosuthu University of Technology**

**6.4.1** MUT identified the need to involve academic staff members in research activities. Interviews were conducted by the Research Directorate to aim to understand why staff members are not involved in research, if they were employed for longer than five years. In 2006, 142 academics were interviewed of which 90 were employed for longer than five years. 84% of these academic staff members participated in the study.

Research questions focused on issues such as difficulties preventing research projects from being concluded, reasons why staff members were not involved in research, and what the Research Directorate could do to enhance and support research activities.

Reasons given by the majority of staff for not undertaking research include:

- Lack of time and resources;
- Teaching workloads;
- Lack of background knowledge and skills;
- Research leadership in Departments;
- Lack of departmental support and peer jealousy;
- Not interested in research;
- Finding a research topic.

The Research Office adopted the following strategies to stimulate research activity:

- Reducing workloads to encourage studying academics;
- Research workshops;
- Research professors appointed;
- Promotions and appointments based on qualifications and research output;
- Recognition of researchers awards;
- Funding for published articles, with R 15 000 going to a trust fund and R 10 000 to the department. Other financial incentives also exist.
- While there has been an initial increase in research output from 2009, in 2011 the research outputs dropped considerably and has not increased again.

#### **6.5 TOWARDS A TRANSFORMATIVE RESEARCH AGENDA: LESSONS FROM TUT POSTDOCTORAL FELLOWSHIP PROGRAMME**

**Prof. Lulama Makhubela, DVC: Postgraduate Studies, Research and Innovation, Tshwane University of Technology**

**6.5.1** The work that informs this presentation has been initiated by others in the Research and Innovation Directorate at TUT.

Postgraduate performance is based on the student intake and undergraduate pipeline. Participation is low in relation to comparator countries, and racially skewed. Students must have high potential to succeed. 27% of contact students graduate in regulation time, while 42% of contact diploma students graduate within 5 years. Half of the total intake will never graduate, and only 5% of African and coloured youth graduate.

TUT's Transformation Research Agenda was developed as a response to the systemic problems in the undergraduate programmes, and to mitigate against the knock-on effect to postgraduate studies. The massification of higher education resulted in TUT as the largest residential university in South Africa, with over 52 000 students located over nine learning sites across three provinces. It was necessary to devise strategies for both physical and epistemological access.

TUT decided to pursue a postdoctoral programme. Publication output increased from 231.87 units in 2007 to 457.85 units in 2011. Currently 39 researchers (up from 17 in 2008) are employed at TUT, and research income increased from a base of R 38 million to more than R 120 million.

The Postdoctoral Fellowship programme has increased exponentially from 2004 to 2012, when 90 postdocs were registered. This occurred through a strong focus on internationalisation. Since 2009, TUT implemented a targeted transformation agenda, which has had good results.

Lessons learnt from the process:

- An institution needs visionary leadership with political will to make hard choices, show foresight and take calculated risks;
- Enabling environment and support from the Research and Innovation Directorate through internal workshops and programmes for enhancement of research skills;
- Dedicated funding – the postdoctoral fellowship programme amounted to R 19 382 000, while B Tech scholarships amounted to R 4 016 250. The renaming and repositioning of the Vice-Rectorate to include a focus on postgraduate studies, research and innovation also helped to create a different focus.

## **6.6 THE NEED FOR HUMAN RESOURCES AND CAPACITY DEVELOPMENT IN DEVELOPING A RESEARCH CULTURE FROM SCRATCH: RESEARCH AND INNOVATION DEVELOPMENT AT THE VAAL UNIVERSITY OF TECHNOLOGY**

**Dr Bernadette Johnson, Executive Director: Research, Vaal University of Technology**

### **6.6.1** Contextual statements:

- Human resource development is a phenomenon that emerged post World War 2. In South Africa, the post-apartheid state brought about a similar phenomenon. Apart from the Human Resource Development Strategy and the Skills Development Strategy, the most recent document in this regard is the National Development Plan of 2012. This brought about a changed role for higher education institutions, which brings about changes in the funding and systemic support to institutions.
- The assumption is that there is a problem with capacity; UoTs are viewed as having either too few people, or having people without the required skills and capacity. However, it is also necessary to focus on organisational and system capacity.

- VUT's vision is to lead in innovative knowledge and quality technology education. It will do so by adopting cutting edge technology and teaching methods.
- 'Capacity building is a risky, messy business, with unpredictable and unquantifiable outcomes, uncertain methodologies, contested objectives, many unintended consequences...and long time lags' (Morgan 1998, cited in DFID report 2012).
- Literature states that no single model is most effective, although the social constructivist approach is probably the most applicable. Different ways of approaching the issue can apply.
- Emerging strongly is the community of practice model, which is recognised as having value. Collaborations could be investigated with a range of stakeholders.
- It is necessary for the organisation to learn as it changes, particularly as individual members' capacity develops and increases.
- Research in the context of UoTs must be guided by a triple academic revolution taking note of teaching, discovery and extension. Research must also be informed by teaching and learning.

Academics' competencies should include the ability to demonstrate critical thinking, continuous engagement with the curriculum, role responsiveness, transfers of skills and knowledge, generating new knowledge, and encouraging scholarship. VUT is seeing enthusiasm among staff developing, along with a culture of participation and an enabling environment. Significant improvements and increases in investment and partnerships have occurred, as well as international collaborations.

Academics have indicated that they have found capacity development interventions positive, but some challenges remain. Outputs have increased at VUT, but there is a possibility that the institution may be hitting a ceiling. It will be necessary to increase the base. Significant teaching and learning changes are being implemented, and some in-house programmes are being developed. Appropriate investments are being made into staff, equipment, infrastructure, and a systematic induction programme for new staff is being introduced. Research must be closely aligned to the scholarship of teaching and learning. Innovation has also grown considerably, and there is a VUT Science Park and a foundry and light steel construction unit in place. There is a focus on innovation and commercialisation to take ideas to product. IP protection is also important.

Good progress has been made by VUT to move from a low research base, and all efforts are focused on strengthening research and innovation along with teaching and learning.

## **6.7 DISCUSSION**

- 6.7.1** Naidoo: The DUT presentation in particular indicated that each institution is unique, and that these issues should inform our comparison against all other institutions in the country.

## **7. PARALLEL SESSION 2 SUB-THEME: UNIVERSITIES OF TECHNOLOGY: THE ROLE OF INNOVATION IN THE RESEARCH VALUE CHAIN**

**Chair: Dr Rose Laka-Mathebula**

### **7.1 TECHNOLOGY TRANSFER AND INNOVATION AT VUT AS AN INNOVATION MODEL FOR NEW GENERATION UNIVERSITIES (NGU's)**

**Prof. Jan Jooste, on behalf of Prof. Deon de Beer, Executive Director, Technology Transfer and Innovation, Vaal University of Technology**

**7.1.1** Prof Jooste explained that innovation sits at the core of the research value chain. The meaning of innovation is creativity but it also means the moment it moves from the book shelf to the consumer shelf. The application ensures that the invention has turned into innovation.

He said that TTI's main focus was that design and development, manufacturing, training and incubation should lead to innovation and commercialization. Prof Jooste explained the initial platforms, solutions and advanced platforms between VUT (especially academic faculties) and Technology Transfer and trial problems, solutions, and real problems with the real world outside (Government Public Industry and other higher Education institutions) (See presentation). The intension was not to create capacity within TTI because the real custodians of academic capacity should be the faculty. Needs are identified and some capacity are incubated and once the capacity is mature enough and the faculty is ready to receive the capacity it must be transferred. Part of the model is actually to transfer technology into the faculty which eventually capacitates the faculty to retransfer technology to the outside world.

He explained the map that indicates a whole host of cluster initiatives TTI had started in the Vaal Triangle. All must be driven by a Southern Gauteng Regional Innovation Forum (SGRIT) which is a conglomerate between industry and all the various governmental institutions and funders with the aim to improve the wealth of the region and have neighbourhood trust.

The VUT adopted the mission for the Science and Technology Park to serve as a bridge between VUT and the Southern Gauteng Region's Community.

Prof Jooste explained the manufacturing of a shoe initiative, its technology platforms, additive manufacturing, injection moulding and final repeatable samples. He also alluded on other project samples, successes and success stories.

He concluded his presentation with an explanation of possible VUT and industry collaboration, possible VUT and industry network extension, possible funding for VUT and industry collaboration, new products and process interventions.

## **7.2 DISCUSSION**

**7.2.1** *Question: Were students able to start businesses with the products such as the shoes they were making from the mould? In order to improve the economy, how can this technology assist to empower the unemployed youth?*

Prof Jooste: DTI allocated funding for the Science Park adjacent to Sebokeng. Part of the project was to develop technology solutions which could be franchised to people, encouraging them to become entrepreneurs. The aim was to circulate money in the area, using solutions developed by the UoT to empower local industries and local people.

*Question: Should entrepreneurship form part of the curriculum of programmes? Can UoTs teach entrepreneurship? Are academics adequately entrepreneurial, and are they able to teach students to be entrepreneurs?*

Prof Jooste: In order to teach entrepreneurship one needs to know the market and should have

adequate knowledge of technology. Companies that are operating in that matrix and transform themselves will retain their markets, but they will also be able to deliver another service to that same market. Students who have little or no practical knowledge could not just enter a field in which they do not know the technology or the market. Entrepreneurship can be taught, but with great difficulty. Student should believe in themselves and in the skills they had been taught.

**8. PARALLEL SESSION 2**  
**SUB-THEME: POST-GRADUATE EDUCATION**  
**Chair: Dr Rose Laka-Mathebula**

**8.1 PERCEPTIONS OF POST-GRADUATE STUDENTS REGARDING SUPPORT REQUIRED TO COMPLETE THEIR STUDIES**  
**Prof. Marie-Louise Barry, Associate Professor: Project Management, Faculty of Management Sciences, Tshwane University of Technology**  
**Mr Abel Motsomi, Faculty Statistical Consultant, Faculty of Management Sciences, Tshwane University of Technology**

**8.1.1** On average 7% of enrolled students complete post graduate degrees in South Africa. TUT's Faculty of Management Sciences had realised that there is a lack of understanding of the support requirements of postgraduate students and had started organising generic workshops for intervention which were costly and time consuming.

The following common problems in supervision had been identified:

- Incompatible expectations between students and supervisors
- Interpersonal relationship issues
- Diversity in roles required by the supervisors
- Lack of clear institutional policies and guidelines
- Insufficient support for students
- Sense of isolation experienced by postgraduate students - Johnston

The following were identified in terms of undergraduate to postgraduate studies:

- A big gap exists between undergraduate to postgraduate in terms of intellectual maturity (Delamont and Atkinson 2001:88)
- Early warning signs of difficulties (Manathunga 2005:227):
  - Constantly changing the topic or planned work
  - Avoiding all forms of communication with the supervisor
  - Isolating themselves from the school and other students
  - Avoiding submitting work for review

South African study success factors are:

- Self-discipline and motivation
- Emphasis on examination
- Students must feel in control of results
- Dedicated and willing students
- Effective communication skills
- Communicate in language of instruction

The Faculty of Management Sciences' study design was as follows:

- Critical incidence (staff)
- Nominal groups (students)
- Statistical analysis
- To Delphi

The demographics of Delphi were:

Type of research: 19 research M Tech, 5 D Tech, 1 MBA, 1 M Tech with subjects

Employment status: 46% permanent outside TUT, 23% TUT staff, 19% less than 20 hours per week and 4% full time students

Hours spent on research: 54% <10 hours per week, 35% 11 to 20 hours per week, 8% 21 to 30 hours per week and 4% > 31 hours per week

The outcome of the research in terms of supervisors are as follows:

Identifier: Description

- A\_S1: A supervisor must be appointed as soon as the student has indicated interest in a specific topic
- A\_S2: A memorandum of understanding (MoU) must be drawn up between the student and the supervisor and/or co-supervisor
- A\_S3: The MoU should address frequency of meetings and turnaround time for written work as a minimum
- A\_S4: Supervisors must assist students to clarify their research ideas
- A\_S5: Supervisors who are experts in the field of study must be appointed
- A\_S6: Supervisors must receive training on how to supervise postgraduate studies
- A\_S7: Supervisors must accommodate the fact that students have a great deal to learn about research
- A\_S8: A database should be made available with the profile of supervisors and their fields of expertise
- A\_S9: Students should be allowed to participate in the selection of supervisors

The outcome of the research in terms of the workshops is as follows:

- A\_WS1: Research workshops should continue
- A\_WS2: A proposal workshop is required
- A\_WS3: An abstract workshop is required
- A\_WS4: Formal written feedback from the workshop facilitators is required
- A\_WS5: Time should be given in research workshops for students to clarify ideas
- A\_WS6: Time should be given in research workshops for students to clarify research questions
- A\_WS7: A research workshop on a literature review for the proposal is required
- A\_WS8: Workshops on research methodology are required in order to choose the correct methodology during the proposal phase
- A\_WS9: Examples of the relevant documentation, including a problem statement, abstract and proposal, should be provided
- A\_WS10: Students should only be allowed to register once they have completed the workshop in order to give them sufficient time to complete their studies
- A\_WS11: A workshop on Harvard referencing and finding of literature should be conducted

The outcome of the research in terms of the process is as follows:

A\_PS2: The registration process for postgraduate study must be simplified

A\_PS2: The research process across various departments in the faculty must be standardised

A\_PS3: Dates of the various meetings at which documentation is approved must be made available online

A\_PS4: A process on access to the various sources of information such as the internet, library, books and articles, must be made available

A\_PS5: Guidelines on how to write an abstract/proposal must be made available

A\_PS6: Guidelines should be made available on how to do the literature Review

Prof Barry explained the group score calculation, the requirements related to preparing abstract and proposal, the requirements related to conducting research and requirements related to data analysis and writing up. (See presentation)

She summarised her presentation with the following:

- Postgraduate students require support in workshops
- Supervisors need training
- Alignment and expectations
- Financial and statistical support
- Space to work

## **9. PARALLEL SESSION 3**

### **SUB-THEME: UoT IMPACT/RESPONSE TO SOCIETAL NEEDS**

**Chair: Prof Nqabomzi Gawe**

#### **9.1 PUBLISH OR PERISH: TEAM RESEARCH PARTNERSHIPS IN HIGHER EDUCATION INSTITUTIONS**

**Prof Dennis O. Umesiobi, Head of Department, Department of Agriculture, Central University of Technology, Free State**

##### **9.1.1 Publish or Perish Syndrome: Researchers' qualifications, research environment, funding and time. Research outputs hold the promise of a constructive new era in higher education worldwide and in South Africa in particular**

Challenges faced by HEIs since 1994 included:

- State restructuring of their organizational forms;
- Curriculum and programme change in line with new institutional imperatives;
- High cost of education;
- Unprecedented shifts in the research funding environment;
- Decrease in state subsidy & shifts in priorities of national research-funding agencies towards redress and capacity building.

Proposed solutions to challenges are Team Research Partnerships, with the benefits being:

- R&D cost sharing;
- Reduction of R&D duplication & research synergies;

- Risk sharing and uncertainty reduction;
- Knowledge spillover internalization;
- Easier access to finance;
- Access of complementary resources and skills.

Conclusion: strong relationships existed between partnership types for all fields and research outputs with multiple authors, intra-institutional and inter-institutional partnership types increasing linearly with time.

It seems that the linear regressions observed in the outputs produced through multiple authorships in all disciplines were probably triggered by institutional policy which encouraged peer collaborations in all disciplines.

## 9.2 DISCUSSION

**9.2.1** *Question: You have indicated why CUT follows this model. What are the criteria that CUT will use to establish a Team Research Partnership?*

Response: In our institution they re-appraise staff. All of the criteria share similar objectives. If programmes are not compatible, the partnership will fail. It is therefore important to choose a university and programme with similar objectives.

*Question: How much cooperation is there from staff in order to make this work?*

Response: We stage workshops and train junior lecturers in terms of the process.

*Question: Are senior lecturers also focused in the field?*

Response: Yes, they are definitely focused. I have a PhD and I am currently doing advanced diplomas. It is lifelong learning, with the focus on expertise and passion.

*Question: Don't you think that is where our universities are going wrong? If someone is a good engineer that does not automatically make him/her a good lecturer. The focus should be on creating better lecturers.*

Response: How can you commercialize if you are not a student in your area? It is important to become an expert in one's own area first. I trained as a reproduction physicist, I am working in the field and I am still learning.

*Question: What capacity is required to bring staff to the desired levels?*

Response: We have 19 standard supervisors all over the world and 32 supervisors in our own environment and within the field. There should be synergy between seniorization and internationalization.

## 10. PARALLEL SESSION 1 THEME: COMMUNITY ENGAGEMENT Chair: Prof. Errol Tyobeka

**10.1 PANEL DISCUSSION: CONCEPTUALISATION AND IMPLEMENTATION OF COMMUNITY ENGAGEMENT AT UNIVERSITIES OF TECHNOLOGY: A CRITICAL ANALYSIS**

**Prof. Darren Lortan, Executive Dean: Faculty of Applied Sciences, DUT**

**Prof. Joyce Nothemba Nduna, Director of Community Engagement and WIL, CPUT**

**Prof. Mabokang Monnapula-Mapesela, Dean: Academic Development, CUT**

**Mr Carva Pop, Director: Centre for Co-operative Education, Polytechnic of Namibia**

**Critical Reviewer: Dr Jerome Slamet, Senior Director: Centre for Community Interaction, University of Stellenbosch**

**10.1.1 Prof. Lortan, DUT:**

DUT's strategic plan pays sufficient attention to community engagement. This is achieved through innovation and knowledge transfer. The institution has a draft policy on community engagement, in terms of which implementation is receiving on-going attention. The office of the DVC: Academic has appointed a person to drive community engagement, and there are fragmented but not disorganised community engagement activities within the faculties. The institution also has a separate Cooperative Unit. There are examples such as food nutrition where community engagement is embedded through research and volunteer work, while other examples include Horticulture and Sports Studies.

In summary: while there is no formal, organisational structure in place to take care of community engagement, community engagement is taking place at DUT.

**10.1.2 Prof. Nduna, CPUT:**

CPUT defined Community Engagement as collaborative interaction with individuals, groups and organisations external to CPUT for purposes of teaching and learning, volunteerism, research, WIL and service learning.

The institution has a Centre for CE and WIL, with managers for each of the aspects of service learning, cooperative education and civic engagement. In order to link the centre with the faculties, there are coordinators in each faculty, reporting to the Deans. Senate has a committee looking at Cooperative Education and Service Learning. Partnerships and Innovation activities are reported to the DVC: Research and the DVC: Academic.

Challenges include the need for continuous education with regards to synergies between these two functions. There is a perception that cooperative education has replaced community engagement. The integrated model results in synergies and cooperation that encourage workplace learning and integrated activities. Where workplace learning opportunities are not to be found, students are involved in the projects of cooperative education unit.

**10.1.3 Prof. Monnapula-Mapesela, CUT**

CUT has aligned itself with the national and institutional policies guiding community engagement, as provided by the HEQC in its 2004 definition of community engagement, and the National Development Plan in which socio-economic development and innovation are enforced. CUT views community engagement as active interaction between the university, its communities and other partners, involving the transfer of skills and technology to address common needs. It is part of the institution's

Vision 2020 and of the academic teaching plan 2014-2020. It forms part of the curriculum through service learning, in academic programmes and short courses, and in research. Community engagement projects are housed in various projects. This diversity ensures a range of contributors to community engagement activities. Community engagement is overseen by Senate through the University Engagement Committee of Senate. A further project ensures that graduate attributes incorporate community engagement, and students are assessed accordingly. The core curriculum incorporates four modules, including academic language literacy for all 1<sup>st</sup> year students. A Manager: Community Engagement oversees all aspects of community engagement.

Challenges and benefits:

- The Community Engagement office is under resourced, and depends on institutional expertise. As a benefit, this process involves many stakeholders.
- Many structures could result in many reporting lines, making monitoring of impact difficult. On the positive side, all community engagement aspects are reported to the DVC: Research and Innovation. WIL demands are very high, so it would help if there were a separate structure to focus on this aspect. Curriculum expertise needs to be expanded to incorporate community engagement.

#### **10.1.4 Mr Carva Pop, Polytechnic of Namibia**

The Vision of the Polytechnic of Namibia incorporates service, yet there is no overall policy framework resulting in a diversity of views on community engagement and no accountability for it. There is no accountability because there is no common reporting structure for community engagement. Because the institution did not have a definition for community engagement, it will be necessary to think about how community engagement should be defined since current thinking is driven by traditional universities and developed country contexts. Another issue that contributed to the need for community engagement was the ivory tower syndrome. It will be necessary to determine whether community engagement should be an academic function or an administrative function, and who should benefit from it.

The teaching and learning dichotomy means that community engagement is not recognised as part of the overall workload within institutions. Institutions should spend more time on figuring out what community engagement means for them in their individual contexts.

#### **10.1.5 Critical Reviewer: Dr Jerome Slamet, Senior Director: Centre for Community Interaction, University of Stellenbosch**

We have a differentiated higher education system in many ways, and all of us acknowledge it. Everybody wants to put our institutions in the same mould, regardless of their very different histories and contexts. All of these issues impact on our different approaches to community engagement. There are institutions doing stellar community engagement work, but we are held captive by the insistence on a common definition and measurement for purposes of reward. We are playing a game here; those who think that community engagement is not important want to retain the status quo because it will then not be necessary to measure and report. It is necessary to develop a policy so that we can adopt a number of instruments to measure community engagement against teaching and learning and research.

Once a broad definition for community engagement is in place, it will be possible to select tools that apply to particular institutional contexts. It will also be possible to reward academics for their work in

this regard. Structure follows strategy, which is an accepted management maxim. In this case, historical structures have militated against strategy, and people have fought for their traditional understandings. It may help if we accepted that all our existing understandings relate to the same concept. If we have a Senate committee to oversee community engagement, the composition of the committee should reflect the earnestness of the situation.

After a decade in the field, we have to think outside of the traditional understanding of teaching and learning, research and community engagement as operating in separate and discreet circles. We have to look at all these activities as part of scholarship. We can have the classical model of detached scholarship; or we can have a science for society approach where the society consumes the knowledge generated. The most challenging way would be to address the challenges we face by collaborating across institutions, disciplines and continents, allowing academe to dirty its hands and reach out to address the problems that we face in our societies, and where solutions are required. Knowledge is the most desired product of our time; we need to discover what it will mean for our communities to have access to a university.

## 10.2 DISCUSSION

### 10.2.1 *Nhlapo: It may be necessary to go back to the classical scholars and revisit our understanding of community engagement. We might not be doing enough as universities to address community engagement.*

*Question: When we conceptualised community engagement, we had a difficult time understanding where we should report on this issue – some people felt that community engagement is not an academic activity and should not be discussed at Senate. What is the view of the panel on this issue?*

*Question: How did CPUT sort out the contestations that we heard about? At my institution (DUT) we have a Cooperative Education unit, and we heard that community engagement is fragmented but not disorganised. How are you making it work?*

*Monnapula-Masepela: At CUT we have no problem to convince academics that community engagement is an integral part of the activities of the university. There was no resistance, and we seem to have a real commitment to moving away from the silo mentality.*

*Nduna: The Director for Cooperative Education at CPUT retired, which meant that Cooperative Education and Community Engagement came into one office under my leadership. I appointed a manager in the Cooperative Education unit.*

*Lortan: If one traces our history, one will see that there has long been a contestation about the importance of service learning as part of the academic project. If academics are not going to do community engagement that argument should be shot down. The communities from which we draw our student intake at UoTs have very little if any idea of who we are and what we do. Engaging with these communities for recruiting, retaining and developing students should form the basis for our community engagement.*

*Puukka: International experience in places like Mexico shows that community engagement is an integral element and requirement for graduation; students have to do up to 400 hours of community engagement in order to graduate. The requirement for service to the community was included in*

*legislation in the 1940s, but results were unremarkable despite lots of actions going on. In the city the university identified the most disadvantaged area which was forgotten by the local government; it had dirt roads and nothing was going on. The university worked with this community for years and years, starting with mothers and small children. Small children were taken to a community centre to be taught, but gang leaders threatened the community. The mothers of these small children resisted the gangs. The university then offered small scale entrepreneurship activities for the mothers, and one starts to see improvements: houses are starting to look better, students are faring better, and nine of the ten indicators are now green. This institution is very proud of its model, and is willing to collaborate with other institutions while preparing to move this model into other, similarly needy areas.*

- 10.3 FROM AN INFORMAL SEWING GROUP TO A REGISTERED BUSINESS THROUGH SERVICE LEARNING**  
**Mrs Nyamela Mirriam Makosana, Director: Bambanani for Social Development, Nyanga, Cape Town**  
**Mr Shamil Isaacs, Manager for Technology Station: Clothing and Textile, Cape Peninsula University of Technology**  
**Associate Prof. Joyce Nothemba Nduna, Director of Community Engagement and Work-Integrated Learning, Cape Peninsula University of Technology**  
**Ms Jacqueline Scheepers, Manager: Service Learning Unit, Community Engagement and Work-Integrated Learning Centre, Cape Peninsula University of Technology**

- 10.3.1** I am here to bear testimony to what CPUT is doing in terms of service learning. The university is making sure that service learning is being implemented to benefit both students and the community. We, as the community, approached the institution to ask them to work with us because we felt that we could also contribute knowledge to the classroom teaching that the institution provides.

From a CPUT perspective, we will share the implementation of the strategies that our colleagues talked about in the previous session. Service learning is rooted in the field of experiential education, underpinned by the assumption that for students experience is enriched through service and reflection. It ensures a balance between service and learning so that students and the community both benefit from the engagement.

Bambanani for Social Development is a registered NGO, so we had to set up a parallel structure to work with it. Any organisation or business has to strive to meet customer expectations, which is why we engage with organisations to provide the best quality at the best price and even strive to exceed their expectations.

In 2005, CPUT and Bambanani for Social Development met to discuss projects on which they could cooperate. Bambanani was originally based at a school in Nyanga, working on domestic sewing machines to make garments for people in the community. At the time, the NGO received 25 orders for photographers' waist coats. Students in the CPUT department trained the ladies at the Bambanani project in all the processes and steps. The first order for the waistcoats was completed successfully, and subsequent orders followed under the CPUT supervision and assistance.

A product development project followed, allowing students in their third year management courses to develop a product catalogue for Bambanani, based on their abilities and capacity to date. Students also worked with three other groups. Groups were required to deliver three formative assessments, develop a business plan and a prototype of the envisaged product.

Monitoring and assessment followed the formative assessment model. Students were evaluated on

their participation as part of the group, and could also give a mark for their colleagues' performance. Students were given opportunities to rectify any mistakes that they may have made earlier on. Students received hands-on feedback from the external moderator.

Another product that was developed for Bambanani was a set of bedding for newly wed couples. Students were under pressure to perform, but found it useful to cross physical, cultural and racial boundaries.

In 2009, Bambanani was registered as a CC. A new milestone was reached when Pep Stores was convinced to place an order for 15 000 long johns with Bambanani, which had to be completed within a particular timeframe. It was important to meet industrial standards, so the progress of the group was continuously monitored and high productivity was maintained to keep costs down. A further project saw Bambanani producing laboratory coats for students.

Tips for success:

- Technical and business support for SME development;
- Strong leadership within the community project;
- Strong networks in SME development;
- A gradual process of removing dependence on the university structures;
- Correct preparation of interns prior to engaging with SMEs.

UoTs are well placed to make positive contributions to socio-economic development through service learning. Service learning is a teaching and learning strategy on one hand, and a community development tool on the other; service learning partnerships can be mutually beneficial and can contribute to community development. A community perspective of the impact of service learning and community development could improve service learning programmes. Service learning should be an integral part of the higher education curriculum.

## **10.4 DISCUSSION**

### **10.4.1** *Question: What did students learnt from the community? Was there a mutually reciprocal benefit for students?*

Isaacs: Students have to complete the project in any case, but through this model they engage with the community and see opportunities for entrepreneurship and actually learn valuable lessons.

*Question: The initiative should be applauded for its social enterprise initiative. It is a completely different approach to development from the parachuting model. I think the work with Pep is also a good initiative, since Pep is right there as part of the community. The university could probably find other ways to engage with Pep to address social challenges and develop sustainable programmes in other areas.*

*Question: Is there a MoU between the community and CPU, and what does it stipulate?*

Isaacs: Yes, there is a MoU, but I'm not closely involved with it. The office of Dr Nduna deals with those issues.

*Question: I wonder how students engage with communities – what discussions are there about the*

*ethics of community work, or any other theoretical discussions relating to working with communities. One often hears of students that are completely under-prepared for their engagement with the community.*

Isaacs: We have learnt over time to engage with the community, and we have reflected on the pitfalls and failures to learn from them. There were times when students had misconceptions about what they had to do, for example. We run workshops with students to prepare them to go out into the community, and to impart the soft skills that they will require in dealing with members of the community.

*Question: Does anyone have experience of working in communities around election time – it is particularly difficult then.*

Isaacs: We are accustomed to working in communities when there are protests happening. We do not want to endanger students' lives, but we have learnt to get the job done.

Nhlapo: The Centre for Community Engagement and WIL are clearing houses for protocol issues. We know that TIA has made some proposals in their review of technology stations across the country, and one hopes that their performance will be enhanced because they play a key role in this interaction.

Isaacs: Our technology stations also engage with communities, in the form of small and large businesses. We probably supported about 150 businesses in the last quarter.

*Question: In which year of study are students required to do community engagement? To what extent are students being encouraged to do research and produce a paper from their engagement?*

Isaacs: This project was at an undergraduate level and involved third year students. We are encouraging students in their postgraduate years also to do community engagement, and we also aim to involve staff, but it is early days yet.

**10.5 SUB-THEME: CONTRIBUTIONS TO COMMUNITY DEVELOPMENT THROUGH CURRICULAR (E.G. SERVICE-LEARNING) AND NON-CURRICULAR (E.G. VOLUNTARY, NON-CREDIT BEARING) COMMUNITY ENGAGEMENT**

**Chair: Prof. Errol Tyobeka**

**10.5.1 VOLUNTARY AND NON-CURRICULAR COMMUNITY ENGAGEMENT: UoT CONTRIBUTIONS TO COMMUNITY DEVELOPMENT**

**Ms Carol Whiting, Language Co-ordinator, Faculty of Business, Cape Peninsula University of Technology**

**Mrs Jeevarani Munsamy, Community Engagement Manager, Research and Innovation Unit, Central University of Technology**

**Rev Dr Delysia Norelle Timm, Advisor: Special Projects, Office of the DVC Academic, Durban University of Technology**

**Associate Prof. Joyce Nothemba Nduna, Director of Community Engagement and Work-Integrated Learning, Cape Peninsula University of Technology**

**Mrs Buyisiwe Ngidi, Deputy Director, Institute for Rural Development and Community Engagement, Mangosuthu University of Technology**

**10.5.1.1** This community of practice was established incorporating UoTs engaged in community engagement in some form or another. Various case studies were investigated. Community engagement is embedded in various policy documents, such as the Green Paper and the HEQC Criteria for Institutional Audits, and the 1997 White Paper on Higher Education. All universities were called upon to demonstrate social responsibility and commitment to the common good by making available expertise and infrastructure.

The question is to which extent UoTs are responding to this requirement. UoTs are aware of the impending White Paper that will replace the 1997 White Paper. Key performance indicators of all institutions include community engagement, along with research and teaching and learning. As pointed out by the previous panel there are various approaches to and understandings of community engagement.

The group asked the question how community engagement is planned for and practiced in a UoT context. A need was identified to conduct research into community engagement. The case study approach was followed by the group, because it is very useful to determine the 'how' and 'why'. The study asked 'How do UoTs operate in terms of community engagement?' Different structures, policies, procedures and practices associated with community engagement were interrogated at 4 UoTs in South Africa.

The conceptual framework looked at community engagement as a continuum, where the community and students are both viewed as beneficiaries. The study also incorporated internship, cooperative education, service learning, community outreach and volunteerism.

Research findings were categorised, and various themes were identified. In terms of vision, mission and strategic plans, UoT 4 (DUT) speaks of 'external engagement that promotes innovation and entrepreneurship through collaboration and partnership'. At CUT, the overarching goals of community engagement are viewed as innovation and entrepreneurship, among others. It is essential for community engagement to be based on partnerships. At CPUT the quadro-helix approach is favoured, involving business, industry, government, the university and the community. Other role players are technology stations, student affairs divisions, units and academic departments. All these UoTs engage in national and international community engagement initiatives.

An example of a case study, Khula Sonke, focusing on accounting, economics and life skills tutorial programmes, was provided. Students were asked questions such as 'why are you studying accounting?' Most students indicated that they saw the qualification as a route to earning lots of money, but they did not have the required capabilities to make a success of their studies. An intervention at school level was developed between the Faculty of Accounting at CPUT and a high school in the Cape Town area. Tutorials were provided to learners over a period of eight months, either at CPUT or at the school. Three hours every second Saturday was devoted to these tutorials. Students who applied to act as tutors were provided with training to allow them to act as facilitators. Three tutors were assigned to a group of ten learners, because of the need identified at the time. The approach to the tutorials was also multi-lingual, to unpack content to learners in their mother tongue. The tutorial was evaluated quantitatively and qualitatively.

Case study 2 was conducted at DUT. Students are living in and form part of the under-resourced community. They have a key role to play in shaping and bringing their knowledge to bear in their communities. This project started off as a voluntary, non-curricular project. Community engagement projects are generally led by academic staff that has a certain commitment to making a difference,

over and above what is expected from them. Students from different faculties participated in community engagement activities for the love of the cause, and not for credit.

One such project at DUT, the Urban Food Security project, was initiated by a lecturer who had a desire to improve the lives of children. This project also linked to some of the Millennium Development Goals. It was decided to establish an onsite vegetable garden and provide on-going nutrition education for child care workers and children residing in children's homes. Students were engaged on their understanding of community engagement, and identified aspects such as working together, caring, building relationships, and being hands on. It was deemed necessary to firstly identify the value base that students start off with. Students went out into the community, and started working on the land to establish a vegetable garden. Students also went back to the garden to train the children in the children's home to care for and tend their garden. Students identified the need to convert the project into a service learning project to teach children and their carers about nutrition.

Boundaries between voluntary and community outreach programmes are often blurred. It will be necessary to do further research into community engagement and community development, and to recognise non-curricular community activity in academic departments. Student involvement in voluntary and/or non-curricular community projects should be stimulated along with more formal community engagement projects.

## **10.6 DISCUSSION**

### **10.6.1** *Question: How do you manage the risks associated with taking students into communities where personal health and safety and issues like insurance have to be considered?*

Whiting: We had to get students to sign indemnity forms. It is interesting that some of the tutors working on the project came from the community. Community engagement remains a high risk issue.

*Question: When students are working on community engagement projects, it is often necessary to think about transport and meals. What is being done to make projects economically sustainable – how do we transport students, feed them and protect them?*

Munsamy: Institutions are generally expected to budget for these projects, and students generally are supposed to do them in class time. Sometimes, when projects fall outside regular class times, students may have to provide their own meals or a partner may be brought on board to provide. What is SAHEESA doing in this regard?

Timm: SAHEESA is engaging with DHET to talk about how community engagement can be funded formally through institutional budgets and other funding from bodies like the NRF.

Lortan: It is not an easy struggle, but we are engaging with the DHET on this issue.

## **11. PARALLEL SESSION 2 SUB-THEME: PARTNERSHIPS FOR COMMUNITY ENGAGEMENT Chair: Prof. Joyce Nduna**

### **11.1 COLLABORATIVE SERVICE-LEARNING PARTNERSHIPS BETWEEN GOVERNMENT, COMMUNITY AND UNIVERSITY FOR IMPLEMENTING SOCIAL CHANGE**

**Ms Jacqueline Scheepers, Manager: Service Learning Unit, Community Engagement and Work-Integrated Learning Centre, Cape Peninsula University of Technology**  
**Advocate Ashley Searle, Director: Office of the Consumer Protector, Department of Economic Development and Tourism, Provincial Government Western Cape**

**11.1.1** In Service-Learning (SL) the implementation of the CHESP triad model of partnerships has become a norm as universities strive in partnership with civil society and government to provide services to communities whilst creating opportunities for students. The study was designed to explore the diverse SL partnerships that the University has with its government and community partners. If there is a clear understanding of the dynamics of the various SL partners then more sustainable partnerships and projects will follow. The research focussed on the framing of the context for SL partners within the South African context, the identification of relevant policy for SL and a discussion on Systems thinking which will form the theoretical underpinning of the research paper.

Ms Scheepers explained the theoretical and conceptual underpinning, the research methodology and approach and the SL partnership summits that had been held from 2012 to 2013. The reflections and theory were discussed simultaneously. (*See presentation*).

In a rapidly changing world with social changes, new systems of engagement and collaboration are formed which is true to all stakeholders in SL collaboration to form new communities of practice.

Ms Scheepers said that SL summits had created a space where CPUT staff and SL partners can engage towards:

- The understanding of the role of SL partners in their strive for positive social change
- Improved preparation of students
- How the nurturing of partnerships can enhance the development of those students and communities involved in SL.
- Clarity on the national and international policy landscape for partnerships and networks for community engagement, specifically SL.
- The sharing of experiences related to partnership building for sustainable projects.
- The PAR model can be used to engage with partners on the challenges and other relevant issues and future SL partnerships can be approached with this broader comprehension in mind.

Universities can heed the call from partners to increase dialogue and to enhance the knowledge which will contribute towards beneficial partnerships for SL engagement

**11.2 COMMUNITY ENGAGEMENT PARTNERSHIPS FOR A CORPORATE SOCIAL RESPONSIBILITY PROJECT**  
**Ms Fundiswa Nofemela, Manager: Co-operative Education Department,**  
**Prof Joyce Nothemba Nduna, Director of Community Engagement and Work-Integrated Learning,**  
**Cape Peninsula University of Technology**

**11.2.1** Ms Nofemela said that this paper attempts to highlight new and possible partnerships for Community Engagement that could be established with private companies. She explained the theoretical framework, the methodology, the Bridget to Employment (BTE) Programme and the formation, implementation, maintenance and impact evaluation of BTE in South Africa.

Ms Nofemela said that the lessons learned are as follows:

- This research demonstrates clearly the benefits of a multi-stakeholder approach to solving community development issues. It also demonstrates the role the private sector can play in Community Engagement.
- The establishment of Community Engagement partnerships which include private companies may be a vehicle through which UoTs can simultaneously meet a number of their work-integrated learning imperatives.
- By closing the disjuncture between education and employability requires an integrated approach and multi-stakeholder partnerships is a vehicle through which this can be accomplished.

### 11.3 DISCUSSION

**11.3.1** *Question: Was there a challenge with regard to the language used in the debate on community development? The focus in community engagement is still more driven by needs rather than assets in the communities. When doing community engagement, an analysis is done from an impoverished point of view, which can be seen as a failure in some of the community development projects by universities.*

Response: Universities should be aware that there are different types of knowledge, and that communities have a contribution to make. As universities we should be mindful of what the community owns and what indigenous knowledge systems they have, and that one is not superior to the other. There is awareness that students are also meant to learn from the community. Universities must ensure that the way in which they engage with communities do not abuse the relationship, which is why there is a strong focus on ethics and how the university engages.

With regard to language, students sometimes act as translators in capacity building workshops to assist and facilitate interaction with the particular community. The reception from the community in these instances has been extremely positive. The impression was that the University was adequately sensitive to the cultural dynamics involved.

In the Travel and Tourism project a resource audit was done because the university was conscious of the fact that communities had a lot to contribute, and that these strengths should be highlighted. By identifying the assets of a community, these assets can be linked to the resources of the university and used to the betterment of all.

The language of a particular community formed part of the audit done by the university. Who are the people the university is engaging with and what is the language that they use? The message can then be tailor-made for that specific community.

*Question: To what extent is the department funded and supported by Government?*

Advocate Searle: Community engagement forms part of Government's budgeting process and the consumer education and awareness project makes provision for support and resources in specific projects. Community advice offices play a supporting role in communities. Government bought into the model and sees the benefit of it and requires the support of other stakeholders. The university also budgets for community engagement and work-integrated learning, meaning that certain projects are funded by the university to some extent.

*Question: Is there absolute equality in partnerships?*

Response: There cannot be absolute equality in partnerships but all stakeholders should determine and agree whether a project is worth doing.

## **12. PARALLEL SESSION 3**

### **SUB-THEME: STUDENT DEVELOPMENT THROUGH COMMUNITY ENGAGEMENT**

**Chair: Prof. Mabokang Monnapula-Mapesela**

#### **12.1 AN ASSESSMENT OF SERVICE LEARNING AS AN EFFECTIVE PEDAGOGY AND CURRICULUM STRATEGY** **Mr Henri Jacobs, Director: Work-Integrated Learning & Skills Development, Central University of Technology**

- 12.1.1** How can the effectiveness of service learning as a pedagogy and curriculum strategy be determined?
- Measure against critical cross-field outcomes; and
  - Compare with work-integrated learning.

This study forms part of a Master's degree, with a mixed method approach in which an open-ended questionnaire and the Likert scale were used. The aim was to identify what roles work-integrated learning and service learning play in achieving predetermined outcomes such as critical cross-field outcomes (CCFOs), and how these roles can be quantified and measured?

The attainment of critical cross-field outcomes (CCFOs) allow learners to:

1. Identify and solve problems;
2. Work effectively with others as a member of a team;
3. Organize and manage oneself and one's activities responsibly and effectively;
4. Collect, analyze, organize and critically evaluate information;
5. Communicate effectively;
6. Use science and technology responsibly;
7. Demonstrate an understanding of the world as a set of related systems;
8. Contribute to the full personal development to make an individual aware of:
  - i) reflecting on and exploring a variety of strategies to learn more effectively;
  - ii) participating as responsible citizens; and
  - iii) being culturally and aesthetically sensitive across a range of social contexts." (RSA SAQA, 2001:24)

Conclusion:

- Information is useful in planning future curricula, particularly in terms of which CCFOs can best be achieved through WIL and/or SL;
- Possible credit value that can be attached to WIL/SL respectively;
- Review current 8 credits to SL and 120 credits to WIL;
- Information required to restructure WIL and SL to enhance their effectiveness.

SL has indeed proven to be an effective pedagogy and curriculum strategy that leads to applied competence.

## **12.2 DISCUSSION**

- 12.2.1** *Question: What types of service learning were required from students?*

Response: In this study the focus was on restaurant service, from the basics to fine-dining. Service learning forms part of the curriculum, and is a subject on its own.

*Question: How was the service learning project funded?*

Response: Hospitality Management learners were transported between the school and the restaurant school of the university. There were no big expenses. They travelled in buses belonging to the institution.

*Question: Did service learning score lower than WIL on the table you provided?*

Response: Service learning was more effective than WIL, but both are required. They have different focus areas. WIL is about the student, while service learning is community-based.

**12.3 THE IMPACT OF COMMUNITY ENGAGEMENT ON STUDENT DEVELOPMENT: A STUDENT PERSPECTIVE**  
**Mr Dumisani Xesha, M.Tech student & recipient of the NRF Grantholder-linked Bursary, Department of Entrepreneurship and Business Management, Cape Peninsula University of Technology**  
**Mr Fattinald Phaka Rangongo, M.Tech student & recipient of the NRF Grantholder-linked Bursary, Department of Entrepreneurship and Business Management, Cape Peninsula University of Technology**

**12.3.1** Service learning is indeed a powerful tool. Service learning benefits the community through deepening the understanding of course content, sharpening abilities, enhanced collaboration, learning about human differences and learning to appreciate diverse cultures. The paper followed a narrative approach.

Student 1 was involved with 5 participants in the Waste to Wealth programme, aimed at teaching the importance of recycling. He was a tutor to learners. Products were made of discarded waste and sold. Emotional and social intelligence were addressed.

Student 2's journey through service learning began in 2007. He had no knowledge of community engagement or service learning, but practical exposure enabled him to make sense of theory. Community engagement became more than just about completing a module. It became a passion.

**12.4 DISCUSSION**

**12.4.1** *Question: How was service learning structured?*

Response: At a second year level it is linked to the subject Horizontal Legislation. We have attempted to look at service learning within all subjects.

*Question: As a student, what was your major challenge when working in the community?*

Response: The biggest challenge was language, the diversity within the community and all the different cultures. Another challenge was to convince somebody ten times your age to listen to you and that you talk sense. The challenges were related to the target audience having confidence in what one had to say.

*Question: What support did you have in addressing these challenges?*

Response: At the time service learning within our department was highly unstructured. There was one person that drove the study with discipline, and this gave us confidence.

**6<sup>TH</sup> ANNUAL SATN CONFERENCE 2013**  
**UNIVERSITIES OF TECHNOLOGY: NEW GENERATION UNIVERSITIES TEN**  
**YEARS ON**

**HOSTED BY: TSHWANE UNIVERSITY OF TECHNOLOGY,**  
**KIEVITS KROON COUNTRY ESTATE, PRETORIA**  
**4 OCTOBER 2013**

**1. PLENARY SESSION**

**THEME: INTERNATIONALISATION**

**Chairperson: Prof. Nthabiseng Ogude, Vice-Chancellor and Principal, Tshwane University of Technology**

**1.1 KEYNOTE ADDRESS**

**UNIVERSITIES OF TECHNOLOGY AS DRIVERS OF LOCAL DEVELOPMENT: LESSONS FROM INTERNATIONAL EXPERIENCE**

**Ms Jaana Puukka, President of Innovation Engage, Senior Policy Fellow of the Conseils sans Frontieres, former OECD Analyst and Project Manager**

- 1.1.1** The global talent pool is changing. The working age population of people with tertiary education is changing rapidly, and over 80 million people worldwide now have a tertiary education. International student mobility is also growing, with about 4 million international students throughout the world. The mobility of higher education is dominated by Asia, followed by Europe.

The OECD undertook a review to link the global and the local. The review looked at the role of universities in their locales, focusing on civic society, capacity building, education and skills, and research development and innovation.

The study focused particularly on workplace learning and lifelong learning arrangements in areas where the older population has low skills. The idea was to understand what role universities play as engines of economic and research growth. The research base of the university in the particular area where it is located was investigated, looking at the robustness, quantity and alignment with local industry. Internationally there are examples of universities that have robust education and research, but no community engagement with the context in which they exist.

In RDI, the focus was particularly strong on the innovation aspect, to understand what comes out of the knowledge production component. Often people think that innovation happens only in laboratories; there are of course different definitions but the OECD thinks that innovations have to go to market. An important part of the review also touched on civic society; universities are not only about technology. Humanities and Social Sciences play important roles in ensuring cohesion within societies. It emerged that it is often difficult to mobilise all parties that have to participate in the partnership.

The methodology relied on a self-evaluation or background report, followed by a review visit by international experts, after which a review report is compiled. The review process initially focused on Europe and parts of America where OECD member countries were located. On the African continent, only South Africa has been reviewed so far. Between 2005 and 2013 25 reviews have been conducted. In each place, meetings were held with students, faculty, leadership of universities, and local and

national authorities.

The reviews indicated that there are many good practices in terms of universities' interaction with the communities within which they operate. Gaps include:

- Lack of strategic anchoring within HEIs and HE policy;
- Lack of system coherence and a coordination deficit within HEIs – this relates to inadequate cooperation and articulation between different institutional types or to cases where the horizontal organisation of the university is relatively weak. Academic autonomy is extremely important, but it is necessary to manage and steer institutions.
- Disconnect between knowledge transfer and regional growth – a lot of effort is invested in building Silicon Valleys throughout the world, but many of them are also standing empty. A lot of effort is also going into biotechnology, but commercialisation is not happening within the regions.
- Supply-driven education – universities tend to teach what they have always taught and what they know, rather than addressing the needs of their target audiences. Complete industries remain under-served by higher education institutions.

How do different institutions meet global and local challenges? Technion, the Israel Institute of Technology, is a leader in world class research and development, spending approximately USD\$ 50 million per year on research and development with good results. The Technion R&D Foundation focuses on particular niche areas such as medical equipment, stem cells, alternative energy and imaging systems. Their niche areas generate global rather than local impacts. In the northern part of Israel, the population is 50:50 Arab and Jewish, with Arab people have almost no access to universities.

Another example is the Monterrey Tecnológico in Mexico, a private university founded by business leaders. It has 33 campuses and 6 academic centres in Latin America. It supports high-tech spin offs and social entrepreneurship. Entrepreneurship training is mandatory, and there are interdisciplinary open innovation spaces and business incubators for for-profit enterprises and ventures to support social and community development. Tuition fees are very high, making this an institution for the elite.

Another Mexican example exists, namely the Instituto Tecnológico de Sonora, which was established in 1993 to become an engine of change in Southern Sonora. The institution embarked on a major drive to bring about cultural change, and focused on curriculum reform. The institution focused on competencies and skills, good citizenship and responsible professionalism. Cultural, technological and sports activities as well as English are compulsory. In 2002, the university adopted a demand-led focus on education and adopted a broad engagement agenda. They established a business incubator that focuses on software development, and also established a strong community development centre. ICT training is provided to all people in the region – thousands of people have received IT training. In 2008, the university took the strategic lead by engaging with four different municipalities to do work in eco-systems. It deemed it necessary to align education, research and development with the region's key industries.

Key lessons:

- Build financial sustainability – universities should not rely only on public funds, but should diversify, build university-industry collaborations and help tap into global supply chains;
- Build long-term commitment – balance project-based approaches with a long-term strategy;
- Embed the operations within the university – in order to sustain the work when public funding runs out, champions move on and politics change, it is crucial to embed activities in the mainstream

- activities of the university;
- Engage with the community – develop a win-win collaboration with the local community, and learn from international best practice;
- Transform the university and students – mainstream global and local engagement through all functions of the university.

## 1.2 DISCUSSION

- 1.2.1** *Dr Nhlapo: I have a question on the ‘city-region’ concept that one often hears. Could you also talk about the role of open versus closed innovation and the impact on regional economic development? There appears to be gravitation towards closed innovation.*

Puukka: The city region concept relates to functional areas to which people commute, like a metropolitan area. With these reviews that the OECD conducts, it is generally clear that there are clear functional areas, but with no supporting data because data would have been collected at another level. We could not really get comparative data, meaning that reports are not comparable. In Europe one can see clearly that city areas are leading development. One sees a huge diversification process, with some areas becoming depopulated and very poor, and others developing.

## 2. PANEL DISCUSSION

### 2.1 COMPREHENSIVE INTERNATIONALISATION – NOT JUST FOR THE MOBILE MINORITY

**Dr Lavern Samuels, Director: International Education and Partnerships, Durban University of Technology**

- 2.1.1** There have been many definitions of internationalisation over the years, but the enduring one is one that sees internationalisation as the process of integrating international, intercultural and global dimensions into the work of universities. Internationalisation has been identified by HEIs as the 3<sup>rd</sup> most important driver of their strategy in the past 20 years, and they expect it to take first place in the next five years. It is a potent tool for transformation and for driving strategic goals. Academic mobility has always been at the centre of internationalisation, and it is rare for an institution not to place student or staff mobility at the heart of its internationalisation agenda.

The Erasmus Mundus mobility programme is an example of this. Various types of academic mobility exist, but there are challenges associated with it. While numbers of students involved in academic mobility has increased over the past 25 years, it has not kept pace with the equally massive increase in participation in higher education. Figures are significantly lower in the developing world than in Europe, and the economic recession has also impacted on student mobility.

It is necessary to consider ways to ensure internationalisation of the curriculum, internationalisation at home, and comprehensive internationalisation. Graduate attributes generally drive responses to internationalisation. A graduate who demonstrates international perspectives as a professional and as a citizen will have the following:

- Display an ability to think globally and consider issues from a variety of perspectives;
- Demonstrate an awareness of own culture and perspectives and those of others;
- Demonstrate the capacity to apply international standards and practices, and
- Demonstrate awareness of the implications of local decisions and actions internationally, and vice

versa.

How do we internationalise the curriculum? We need to create communities of practice, and not focus only on content but also on design and delivery. It is necessary to take cognisance of digital citizens and virtual mobility. Internationalisation of the curriculum is increasingly preparing people for living in the global world.

The role of the lecturer is central to achieving the broader internationalisation strategy. Competencies of staff have to keep pace with developments in this area. A competence matrix has been developed for lecturers at Hanze Dronigen University of Applied Science, based on the broad process of evaluation, review and reflection, imagining, revision and planning, acting, and evaluation. This is an iterative process that has to be negotiated along the way.

The rationale for comprehensive internationalisation is to ensure improved student preparedness, and should be a central issue to the core business of universities. One cannot speak of innovation and scholarly output without talking of international collaboration, partnerships, engagement, and benchmarks.

Internationalisation is a fundamental element of producing graduates that are global citizens, culturally competent, sought by prospective employers and are globally competitive. Our local programmes must be competitive internationally.

## **2.2 INTERNATIONALISATION: A POTENT TRANSFORMATIVE TOOL FOR HIGHER EDUCATION?** **Dr Mark Hay, Consultant in Higher Education, Advisor to the MANCOSA CEO and Principal**

**2.2.1** There are four or five aspects relating to internationalisation that have to be touched on. Internationalisation is a means to an end, and a process. It means that the goal of internationalisation is to impact on the core functions of higher education, to produce the graduates that Dr Samuels was talking about. The biggest gap in terms of internationalisation is that broader, institutional strategies do not cascade down to the academics. There is still a perception in many institutions that the international office will do internationalisation. It is necessary to understand the process of internationalisation, from Council right down to the academics.

Benefits of internationalisation include:

- It is a vehicle to help the institution achieve its strategic plan;
- Benchmarking and sharing good practice – we need a national policy that is collectively owned by all institutions and driven by the DHET;
- Reputation;
- National and international collaborations, partnerships and networks must be established to effectively compete;
- Exchange of expertise;
- Joint degrees, research alliances or projects;
- Mobility of students and staff.

Ensuring quality also benefits from internationalisation in that:

- Contributions of higher education to advancing the public good and the knowledge society are expanded;

- Curricula, including the informal or hidden curriculum, are opened up. Often we don't have ownership and engagement with internationalisation, which makes it difficult to achieve the objectives of our strategic plans.
- There are initial signs of 'mutual recognition' of the benefits of internationalisation for HEIs. Collective research activities, exchange of research and academic expertise could be explored.

The future:

- From homogenisation to innovation;
- Mobility of people and ideas;
- Impact of technology and social media – 'point, click and study';
- Drive for local knowledge to be linked to global knowledge, where global solutions are required, e.g. HIV/Aids;
- Global challenges invite collective efforts in areas like food security, water security, global security, renewable energy and sustainability;
- Discovering new epistemologies through engagement and partnerships, and
- Achieving internationalisation at home.

There are three levels at which one can look at reality:

- The real – structures;
- The actual – events;
- The empirical – experiences;

It is necessary to consider lessons on deepening internationalisation, at the level of the individual, the group, in terms of organisational culture and at the level of leadership, and in the wider, environmental context. The importance of changing institutional culture – the way we do things – is particularly important and will be driven by international collaboration.

## **2.3 RE-THINKING INTERNATIONALISATION: A HIGHER EDUCATION RESPONSE/PERSPECTIVE**

**Dr Chris Nhlapo, Deputy Vice-Chancellor: Research, Technology, Innovation and Partnerships, Cape Peninsula University of Technology**

- 2.3.1** In the absence of a national framework on internationalisation, it is necessary to re-think the concept. International dimensions of higher education informed this presentation, and the OECD study into approaches to internationalisation and their implications for strategic management was particularly valuable.

Internationalisation of higher education is one of the ways a country responds to the impact of globalisation yet, at the same time, respects the individuality of the nation.

At a national level, internationalisation is driven by the prestige of the national education system, access to a larger variety of educational options and qualifications and economic benefits. At an institutional level, there are benefits like staff and student mobility.

Most of the research available on academic mobility is still occasional, coincidental, sporadic and episodic. The authors are unanimous that internationalisation is not uni-dimensional – there are different perceptions and approaches to it. Internationalisation as an academic matter is difficult to manage. It is not clear what qualifications are needed in the International Office, and what type of

cultural agility is required. There is a lot of rhetoric around the issue.

Some myths and misconceptions about internationalisation also exist, such as:

- It is education in English language;
- It is staying and studying or studying abroad;
- It is an international subject;
- Having many international students;
- Higher education is international in nature;
- It is a goal in itself;
- The more partnerships and MoUs a university has, the more international it is.

We have to re-think the issue of internationalisation in South Africa. There are various approaches, including activity, competency, ethos and process approaches.

South Africa does participate in some bilateral and trilateral arrangements such as BRICS, and engages in projects looking at climate change, environmental issues and food security. Universities could play a key role in the long-term BRICS vision. The BICS-Africa cooperation is a further important initiative, in terms of which institutions should determine how it will engage with countries on conflict ravaged areas such as Syria, Palestine, Iran, and Afghanistan. IBSA is celebrating 10 years of partnership, and it is important to ensure that all these partnerships are used to increase capacity in the country.

It is time to move internationalisation from the periphery to the centre, where it belongs. To what extent is internationalisation reflected in institution-wide governance and administration? The answer to this issue is generally quite disappointing – there will be different answers from colleagues within the same institution. It is necessary to understand what it means to be a truly international institution, and what the implications are for national policy.

Institutions need to adopt a specific model, based on their realities on the ground to assist them to mainstream internationalisation and ensure intellectual coherence and management of intellectual assets. Economic and political rationales have to be kept in mind, along with off-shore trade and intellectual property. When dealing with international universities it is necessary to understand property licensing arrangements and prescriptions for off-shore transactions.

The ideal will be a broad, university-wide strategy, a proper positioning of the international office, performance indicators and targets, better alliances and international best practice. It is also necessary to determine whether a centralised or decentralised approach should be adopted.

## **2.4 PROPOSAL OF A FRAMEWORK FOR INTERNATIONALISING CURRICULUM WITHIN UNIVERSITIES OF TECHNOLOGY**

**Ms Chichi Maimane, Director, Centre for Curriculum Development, Central University of Technology**

- 2.4.1** Where are UoTs in regard to internationalising the curriculum? Members of the SATN Programme and Qualifications Committee, i.e. a total of seven UoTs, were asked to indicate what they have achieved in terms of conceptualisation, challenges, monitoring and evaluation, impact and lessons learnt. They were also asked if there is a framework or guidelines that can be considered for those that are in the process of internationalising their curricula or using the framework for evaluation purposes.

Several documents that refer to internationalisation were interrogated to understand the legislative framework and higher education context, including Education White Paper 3, the SADC Protocol, the National Plan on Higher Education and the HEQSF document.

Why should curricula be internationalised? A few good practices, such as fostering a culture in which everyone is appreciated and ensuring academic and cultural growth are only some of the benefits. It is important to give value to diversity, which internationalisation will help achieve. It is necessary to encourage and support multi-cultural cohorts to facilitate formal and informal learning.

There are no clear guidelines on the process to be followed. As we start internationalising our qualifications, it will be necessary to keep in mind considerations and unique demands for professional qualifications from different countries, and in some cases there may even be compulsory modules.

Barriers to internationalisation include:

- Academic staff may be reluctant to participate;
- There may be a lack of guidance, support, infrastructure, and capacity to ensure sustainability;
- Assessment of learning outcomes, and from whose perspective;
- Marketing and commercialisation of programmes;
- Incompatibility of the quality management systems of different institutions or countries.

The draft framework was based on an analysis of the HEQCs programme framework. Some institutions have not yet started, one institution recently launched an internationalisation strategy, and one institution indicated that they are looking at internationalisation from different perspectives – incorporating global perspectives in their local programmes. They also pursue partnerships for double or joint degrees as part of their international agenda.

One institution indicated that they do not have any examples of international curricula or fully internationalised programmes, but that they are working on such programmes with international partner institutions. While this institution has offered joint degrees in the past, these did not work well. This institution worked to develop a comprehensive policy document to govern the internationalisation of curriculum. Alignment of different countries' legislative framework and quality frameworks is particularly difficult.

Only two institutions indicated that they have got a strategy for internationalisation or that they are working on a transformation plan.

The proposed framework, which is aligned to the HEQC accreditation framework, was used as the basis for the internationalisation of curricula. Additional information that might be required to internationalise a programme was identified and included in the document. Internationalisation is viewed as a tool for transformation or renewal, and is aligned to content, perspectives, articulation and progression, sustainability, monitoring and evaluation.

In terms of student recruitment and admission, aspects such as assumption of learning, institutional language policies, legislation, and student support programmes are considered. It is also necessary to consider staffing, staff development, conditions of service, selection, appointment, induction and payment of staff, and contractual arrangements among others. Other aspects of the framework include teaching and learning strategies, student assessment policies and procedures.

It seems that UoTs are still in the infancy of internationalising their curricula. An in-depth study of current professional qualifications such as in the case of accounting and internal auditing, where some international component are already incorporated, could provide lessons. The recruitment of staff with international experience and exposure will add value, and it will be valuable to take advantage of current partnerships and collaborations.

## 2.5 DISCUSSION

**2.5.1** *Question: Realising that UoTs are at the infant stage of internationalisation, should we not look at the conditions within our communities to inform a workable model?*

*Question: I would like to sensitise the panel in terms of the importance of WIL as a vehicle for internationalisation.*

*Question: I want to know how the study presented by Dr Maimane links to what internationalisation is not?*

Dr Nhlapo: In the absence of clear guidelines we may think that we are still in our infancy as far as internationalisation is concerned, but it is important to take the lessons that we are learning and have learnt to devise a policy. It is a given that we learn from the literature, without necessarily copying what is happening in other countries. We have to take note of our contexts and perspectives on the African continent.

Ms Maimane: I did not imply that there is nothing happening at UoTs when I mentioned that we are in our infancy, it merely means that what is happening has not yet been documented and there is no national policy or guidelines. I also mentioned that we have some fields where professional practice is providing some guidelines. I concur with the statement that we should focus on what works for us, and not merely imitate what is happening elsewhere in the world.

Dr Samuels: Yes, there is no policy. There is a special interest group in IESA to look at internationalisation. Before this concept became a formal one, a lot has happened in terms of internationalisation within our institutions. In Engineering we have qualifications governed by the Washington, Dublin and Sydney Accords, and we have visiting professors and international students to internationalise the classroom experience. We must not overlook that a lot of these initiatives and good practices are already happening, whether by default or design. I think we should also not adopt a parochial point of view, but should ensure that we give our students a world view and a benchmarked experience. It is also an opportunity to take our local challenges and knowledge to the global stage. We should contribute different lenses to appreciate knowledge.

Dr Hay: There is a growing interest in the innovative practices that we have adopted in South Africa, so we have good lessons to share with our counterparts internationally. We have garnered interest internationally.

Dr Nhlapo: I am a firm believer that we should design our own framework and internationalisation strategy. We must ensure that our local knowledges are not lost, and are protected by our IP laws. We must also debate whether we are African universities, or universities in Africa. We need a solid foundation for our national approach to internationalisation.

Ms Puukka: I think it is important to tackle global challenges at the local level – there is a need to engage in south-south collaborations. Europe is not the direction that you should look at, because community engagement there is under developed. It will be better for South Africa to look towards South America. That does not mean that you cannot use the massive knowledge that resides in the best universities in the world. I think you could take advantage of MOOCs, where knowledge has been developed by institutions like MIT that can inform your courses because there is no cost associated with it, and will bring about some element of internationalisation.

### **3. PLENARY SESSION**

**Chairperson: Prof. Chris Jansen van Rensburg, Director, SATN**

#### **3.1 SPECIAL PRESENTATION: THE BLOODHOUND SSC**

**Ms Marina Joubert, Science Communication Consultant**

**3.1.1** A presentation on the Bloodhound SSC was provided. 30 years ago to the day the land speed record of 633 mph was set by Richard Noble in the Nevada Desert, driving the Thrust 2. Only six men in history have managed to drive faster than 600 mph. 30 years later, Richard Noble is still engaged in a project to build a car that can reach 1 000 mph. After a global search, the team identified a site in South Africa, Hakskeenpan in the Northern Cape, which provides the most suitable environment for the project. The Northern Cape government participated in a project to clear the pan of any pebbles and rocks that could provide obstacles. Earlier in the year the pan was flooded, but some ground breaking technology is being used to survey the environment and ensure that it will be ready.

A big part of the project is getting sponsors on board, and there are various ways for the public to get involved. MTN is a crucial partner to the Bloodhound SSC project, and will make sure that there is live data transfer and media coverage. Educational outreach is one of the spin-offs of the project, and the Bloodhound team often visits schools and other sites to talk about the project. The education team has a driving simulator to make people experience what it feels like to travel at this speed. The philosophy of the project is also to encourage women and girls to consider engineering as a career, while local communities are being encouraged to create toys and souvenirs when the car will be tested in Hakskeenpan. It is envisaged that the car will travel to South Africa in 2015, when an attempt will be made to break the current land speed record. In August 2016, an attempt will take place to reach 1 000 mph.

Any UoT staff member wishing to become a Bloodhound ambassador was invited to contact Ms Joubert to request more information.

It was noted that the UoT community is involved in a project to develop renewable fuel, which is also being tested in the Hakskeenpan.

#### **3.2 SPECIAL GUEST LECTURE**

**UoT – INDUSTRY INTERPHASE – CHALLENGES AND OPPORTUNITIES**

**Dr David Phaho, Group Functional Manager, Refinery Technologies Group, SASOL Technology Research and Development**

**3.1.1** SASOL has been involved with universities for a long time. The presentation will focus on the role of innovation in society, and on SASOL's collaboration with universities.

For industry, innovation is necessary to create the competitive advantage and to increase commercial value. It also enables industry to fend off competitors, and allow it the freedom to operate. For universities, it is important to innovate to create new knowledge and build capacity, and to allow them the freedom to share their knowledge, improve their reputation and attract the best students possible.

Looking at a comparison of innovation scorecards of all countries in the world, it is clear that South Africa is not leading in terms of any of the indicators such as technology exports, research and development expenditure, patents, business environment, etc. South Africa has some of the best renewable resources on the planet, which should provide opportunities to improve South Africa's standing in this regard.

For a thriving innovation ecosystem, it is necessary to share risks between academia, industry, the research councils and society through aligned capability and skills transfer to realise core commercial advantages. It is only when academia properly understands industry needs that curricula will respond adequately. The research councils should act as a conduit between industry and universities to ensure that the curriculum is aligned to industry needs.

SASOL's local innovation network includes interaction with:

- Research councils;
- All universities;
- Analytical laboratories;
- DST (tax incentives);
- NRF (research chairs, postgraduate bursary schemes).

The original intent of the SASOL-university collaboration was to:

- Ensure long-term sustainability of scientific and engineering capability for SASOL and South Africa;
- Secure access to skills, resources, research capability;
- Actively promote transformation within the chemical industry;
- Effectively manage IP to ensure protection of competitive advantage.
- The programme commenced in 2006, when R 250 million was committed over a period of 10 years. Only one year of the project remains. R 175.6 million has been spent to date, and there has been massive impact on communities and in 10 universities.
- The aim was to develop and retain talented academics, and build capacity in research and teaching in fields of chemistry and chemical engineering using a hub and spoke approach. The project identified the need to upgrade research and teaching facilities, to create opportunities for young researchers and promote diversity within the chemical industry.

Key areas of collaboration with South African universities include:

- Research grants;
- Non-binding grants;
- Salary subvention and young academic support to retain academics at universities;
- Infrastructure development through capital equipment grants to upgrade and expand facilities;
- Secondments to carry out research and supervise postgraduate students and fulfil teaching functions.
- At present, 70 academics are funded by SASOL, of which 62 are males and 8 are females. Work still has to be done in terms of addressing racial equity.

Key learnings:

- There must be strong alignment between the spokes and the hub;
- Look for opportunities to collaborate;
- It is critically important to take a strategic view of capital equipment;
- Appoint expert operators;
- Young academics need mentoring and support to become effective;
- Great need for funding to be used for running costs for postgraduate research;
- Laboratory safety awareness could be improved.

Room for improvement:

- The current university collaboration is restricted to only 10 of the 23 national universities;
- The focus is still disproportionately on established, historically white institutions with limited involvement of Black academics;
- Limited interface with top university management at all institutions – university management should understand what SASOL is doing on campus, and what it can contribute to the national system of innovation.
- SASOL wishes to enhance its relationships with PDIs and UoTs.
- Broader funding reach as well as improved ability to leverage co-funding from key government departments like the DST, DHET and DTI;
- Better engagement with HESA and SATN to ensure alignment with top management at different universities;
- Improved engagement with all universities will improve the pipeline of black postgraduates and academics in line with the country's transformation imperatives.

### 3.3 DISCUSSION

#### 3.3.1 *Dr Timm: You said that there is a problem in terms of gender profiling. To what extent are your criteria excluding females? Often there are age limits imposed in criteria in funding applications.*

Dr Phaho: The first thing is for any entity to engage directly with university management before any criteria are identified and imposed. It makes sense to identify pockets of excellence, and where there are impediments to try and move beyond them. When a company is committed to excellence, it has to work with institutions to ensure that there is parity and quality.

*Prof. Tyobeka: It is good to hear that SASOL is keen to establish relationships with all institutions. I am not saying that SASOL should move away from its focus on excellence, but what about the developmental agenda and the history of the country. What philosophical change will SASOL adopt to approach all 23 institutions?*

Dr Phaho: SASOL established a foundation with the mandate of focusing on HDIs. What is now evolving is that we are setting up communities of practice to engage with all institutions in the country. I have responsibility for engagement with all universities, and we are keen to do things better.

*Prof. Nevuthalo: SASOL relies for its innovation not exclusively on South African institutions – we are aware that you have collaborations with other international universities. Is it possible that we can tap into these overseas experts and technical advice to learn from them through seminars for our staff and students?*

Dr Phaho: I think it would be imperative, because we are spending the money in any case, to optimise such opportunities. It is also true that they generally bring new and broader perspectives. We may not have done this very well in the past, and we will certainly try to ensure that we optimise these opportunities. This will also allow universities themselves to concretise their engagements with the national system of innovation.

### **3.4 CONFERENCE SUMMARY**

**Prof. Thandwa Mthembu, Chairman of the SATN and Vice-Chancellor and Principal, Central University of Technology**

**3.4.1** A number of broad themes, lessons and challenges that emerged from the discussions were summarised by Prof. Mthembu:

- Policy and the policy environment – it is important for UoTs to consider how they live out their mandates, embracing technology to provide relevant opportunities to young people, but also responding to the world of business and industry.
- Engagement with stakeholders – the problem with using the term ‘community engagement’ is that people think UoTs should only engage with the poorest of the poor. It is important to engage with all stakeholders from business and industry, government and civil society to address their needs. Demand rather than supply driven programmes should inform the ways in which UoTs respond to their stakeholders. From the presentation delivered by Ms Puukka, it was clear that it is essential for UoTs to spin off business and industry and enable economic participation, and that engagement is not a one-sided affair with the UoTs as benefactors. If there is a lack of responsiveness to the region in which a UoT operates, people will not see its value, meaning that investment in time and money will dwindle. UoTs should ensure that their local contexts benefit from their global competitiveness.
- Entrepreneurship as an embedded component of the curriculum is an essential component, considering that job creation is a priority. We have to change the game and provide young people with skills that will help them create their own jobs rather than spending days in line waiting for a job.
- Student centeredness has to be debated to arrive at a shared understanding. By talking of demand driven rather than supply driven programmes, UoTs will go some way towards being student centered. Technologies and e-learning and e-assessment should be incorporated not as add-ons, but integral elements of the programmes that are designed.
- It is not clear how responsive the policy environment is to articulation between UoTs and traditional universities. It is not certain at this stage how some of the recent policy announcements will impact on students’ academic careers and articulation possibilities.
- There seems to be an obsessive focus on UoTs as being only certificate and diploma-awarding institutions. Is this correct, or misguided? Going into a demand-driven approach, what is it that business and industry require as minimum qualifications for employment? From the presentation by Dr Kraak it appears that the market expects Bachelor’s degrees as minimum qualifications, which could set the direction for tertiary institutions very clearly.
- In several sessions the importance of providing students with time, opportunity and social capital to improve their chances of success were highlighted. It is important to consider the environment in which our students operate.
- In terms of research and innovation, it is clear that research is a function of a multitude of forces.

In research there are a number of perverse incentives currently at play, requiring a need to balance the focus on throughput with an ethical focus.

- Certain targets had been set for research and development, and in some instances it is growing negatively. Dr Phaho presented an innovation scorecard and expressed the view that all universities must work towards creating social and technological innovations. UoTs must not be seen as a threat to traditional universities, instead these institutions should collaborate to grow the country's economic capacity. All universities should put petty rivalries aside and work towards the greater good of the country harnessing academic research and innovation. UoTs must engage the policy makers to talk about the protected status of traditional universities.
- From the presentation by Prof. Mouton, it emerged that there is a lot of corruption and unethical practice associated with research incentives, which will require action. Ways have to be found to focus on outcomes and the impact of research, rather than on the quantity of the outputs which creates perverse incentives.
- Engagement is a broad term that encompasses businesses and industry and not only the poorest of the poor. It ties in with the concept of building social capital to create opportunities in the broader civil society. As universities of technology we should ask what our most appropriate niche areas are, and whether the expertise and knowledge that we steward could not be used to better effect. It is also necessary to think about centralised or decentralised models for engagement within institutions to ensure a consolidated approach and framework. If there is a purely centralised system, it could result in everyone else abdicating their responsibilities and thinking that only one office should be responsible for engagement. A hybrid model may be more applicable, which could also take cognisance of the ways in which WIL and service learning are integrated into how UoTs engage with different organs of society.
- In terms of internationalisation, it seems that internationalisation is a convergence of the global, the regional and the local. The question is how curricula can be adapted to incorporate a variety of influences? Could a demand-driven approach also be followed, combined with best practices from other places in the world? International examples of good practice were provided by Ms Puukka.
- What type of academic orientation, attitudes and values should we inculcate in our students? There is a big challenge in terms of change management to convince staff and students that demand-driven, student-centered approaches are necessary. South Africa has no internationalisation strategy which could be a consequence of its history. If we could open up our institutions to take on all the people that are interested in postgraduate studies, we will improve our standing in terms of research and innovation. People move on the basis of what they perceive to be beneficial for their futures.

#### **4. CONFERENCE CLOSE**

**4.1** In closing the conference, Prof. Jansen van Rensburg expressed gratitude to the following individuals and organisations for making the conference a reality:

- Mrs Christelle Venter, the SATN Administrative Officer, without whom the conference would not have been possible;
- SASOL, MERSETA, Bestmed, SHARP and Purco were thanked for sponsoring the conference.
- To compile a sensible, intellectual programme, five individuals assisted SATN. Prof. Lategan, Prof. Staak, Dr van Staden, Prof. Nduna, and Dr Samuels were thanked for their work in this regard.
- Prof. Staak, Prof. Erasmus and Dr Makoa were thanked for evaluating the best conference papers. The chairs of each session were thanked for ably managing each session.
- The Vice-Chancellor of TUT, Prof. Ogude and her staff were thanked for hosting the conference,

and for the work that they have done to assist SATN.

- The Vice-Chancellors forming part of SATN were thanked for their support in organising the conference.
- Lastly, the presenters of each of the papers delivered at the conference were thanked for their work.

The following were awarded as the best papers delivered at the conference:

- Community Engagement through Action Learning: A Vehicle for Student Education, Prof. Nduna, Ms Scheepers;
- Co-operative Education at the TUT: a New Direction for Work Integrated Learning and Employability, Dr Marius Wessels; and
- E-Learning at UoTs – our Strength for the Future, Mr Johan Badenhorst.