

Production of Academics and Strengthening of Higher Education Partnerships with Industry

Technical Task Team

Status Report

4 March 2014

All Components are Inter-linked to Optimise The Academic Production Pipeline



1. Attracting and Retaining Academics

- **Capacity building challenges:**
 - Mobility and geography
 - Career development incentives: research and innovation
 - Access pipeline (PhD) – organic growth too slow
 - Compensation comparisons with industry
 - Public and Private HE institutions
 - Link funding for studies to employment contract with HE institution
- HE: the past is not a good predictor of the future
 - Technology is transforming the HE landscape
(e.g. satellite content streaming to rural areas)

1. Attracting and Retaining Academics

Doctoral Enrolments: 1994-2009

Country	PhD Growth Rate	
	(Per Million of Population)	Total/Population
South Africa	26	1300/50 000 000
Brazil	52	10400/200 000 000
South Korea	187	9350/50 000 000
* SK=620% vs. SA		

Year	Enrolments				
	Male	Female	White	Black	Total
1994	3,436	1,488	4,137	787	4,924
%	69.8	30.2	84	16	100
2000	3,958	2,435	3,993	2,400	6,393
%	61.9	38.1	62.5	37.5	100
2007	5,803	4,249	4,751	5,251	10,052
%	57.7	42.3	47.5	52.5	100
2009	6,041	4,486	5,826	4,637	10,529
%	57.4	42.6	55.3	44	100

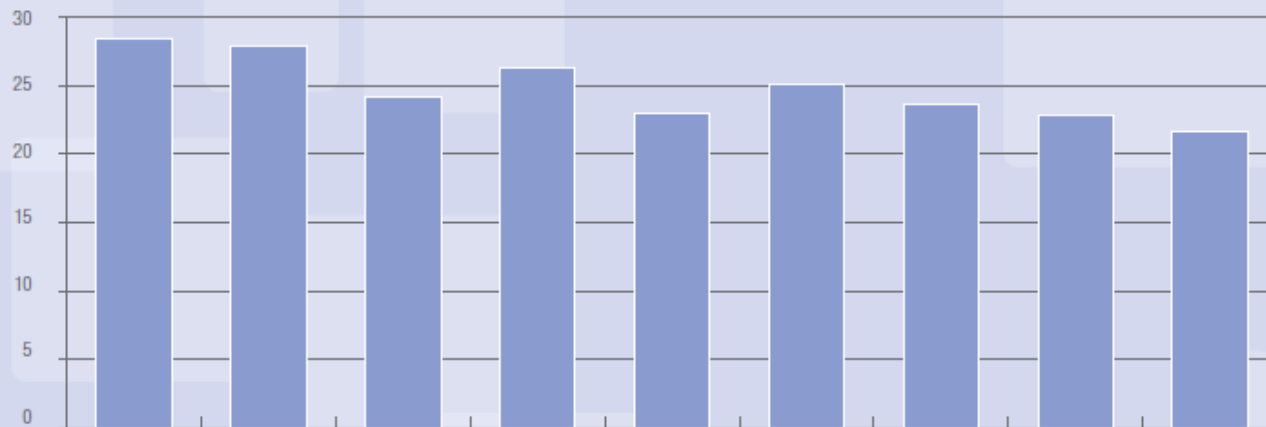
*50 individuals did not specify a population group in 2007 and 66 in 2009

- High PhD attrition rate: 12% of PhD students graduate (improving)
- Organic pipeline will take 20 years at 10% growth per annum to attain current South Korea levels – same population.

Source: Higher Education South Africa (2011)

1. Attracting and Retaining Academics

Doctoral Graduations: 2002-2011



Low growth rate:
0.84% per annum

2002/03 to 2010/11: 6,73%
growth in PhD graduations per million of the population

Source: National Research Foundation (NRF)

2. Critical Discipline Shortages in HE

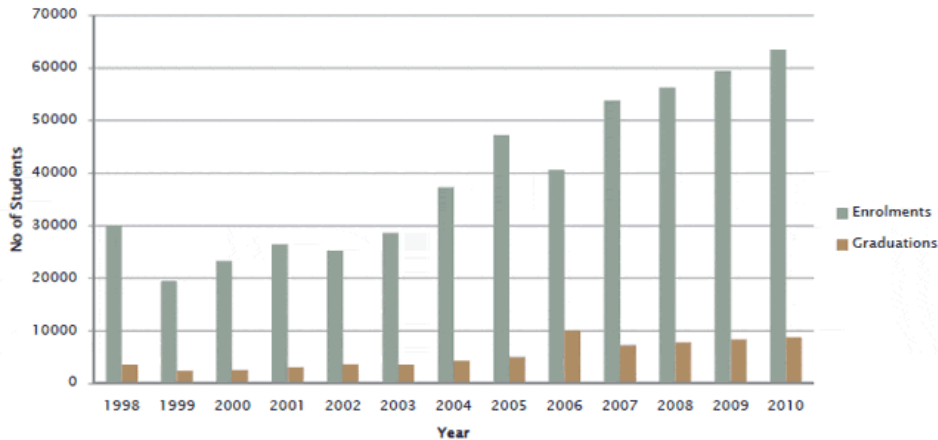
- Teaching profession (Maths and Science)
- Health care (doctors, nurses, aligned professions)
- Quantitative disciplines (STEM) - learn from Asia
- Engineering and technology
- Information, communications and technology (ICT)
- Business, management, leadership, finance

Source: Engineering Council of SA (ECSA)

2. Critical Discipline Shortages (Example)

Enrolment vs Graduations (degree & Diploma) All Engineering Disciplines

Degree & Diploma Enrolments vs. Graduates
All Engineering Disciplines (1998 – 2010)



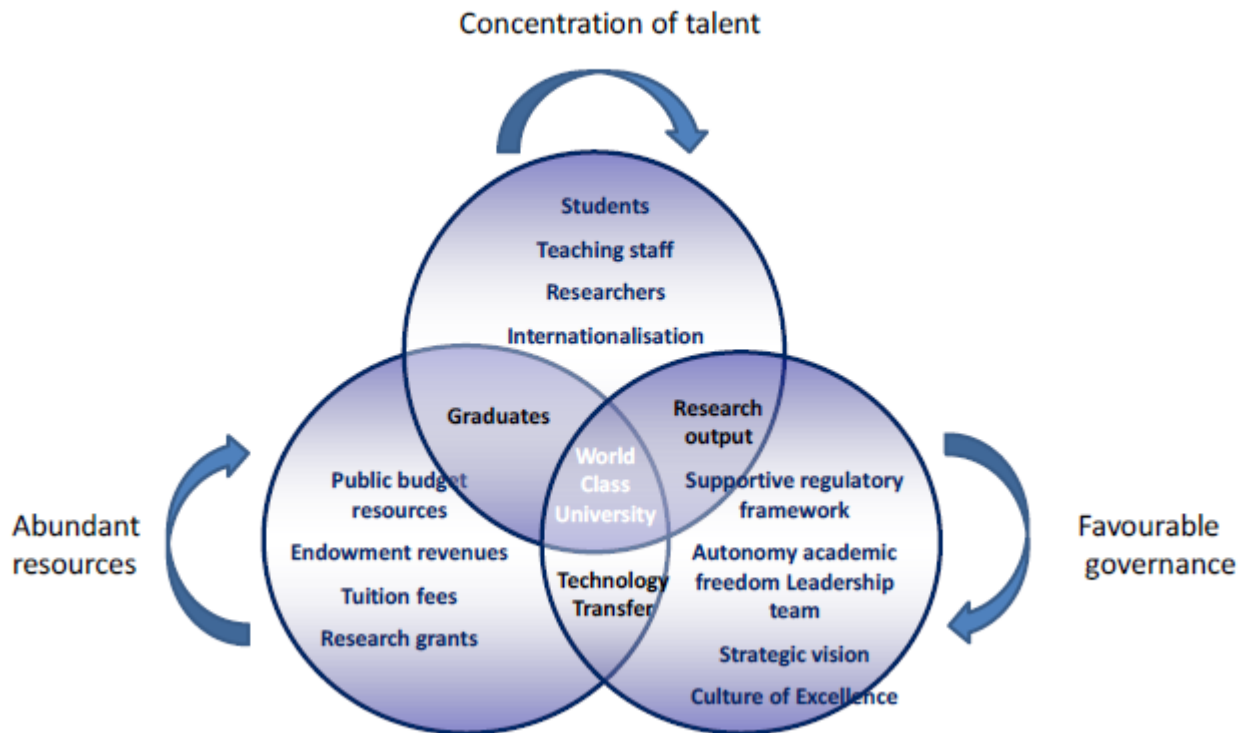
Of 511 564 enrolments in engineering disciplines from 1998 to 2010, 14% graduated.

- Global comparison (WEF)
- Basic education challenges and consequences for HE
- Quantitative disciplines (STEM)
- Emerging dynamic markets (BRICS)
- World class focus
- Professions and CPD role

Source: Engineering Council of SA

3 Best Practice Sustainable Model

Strategic Direction

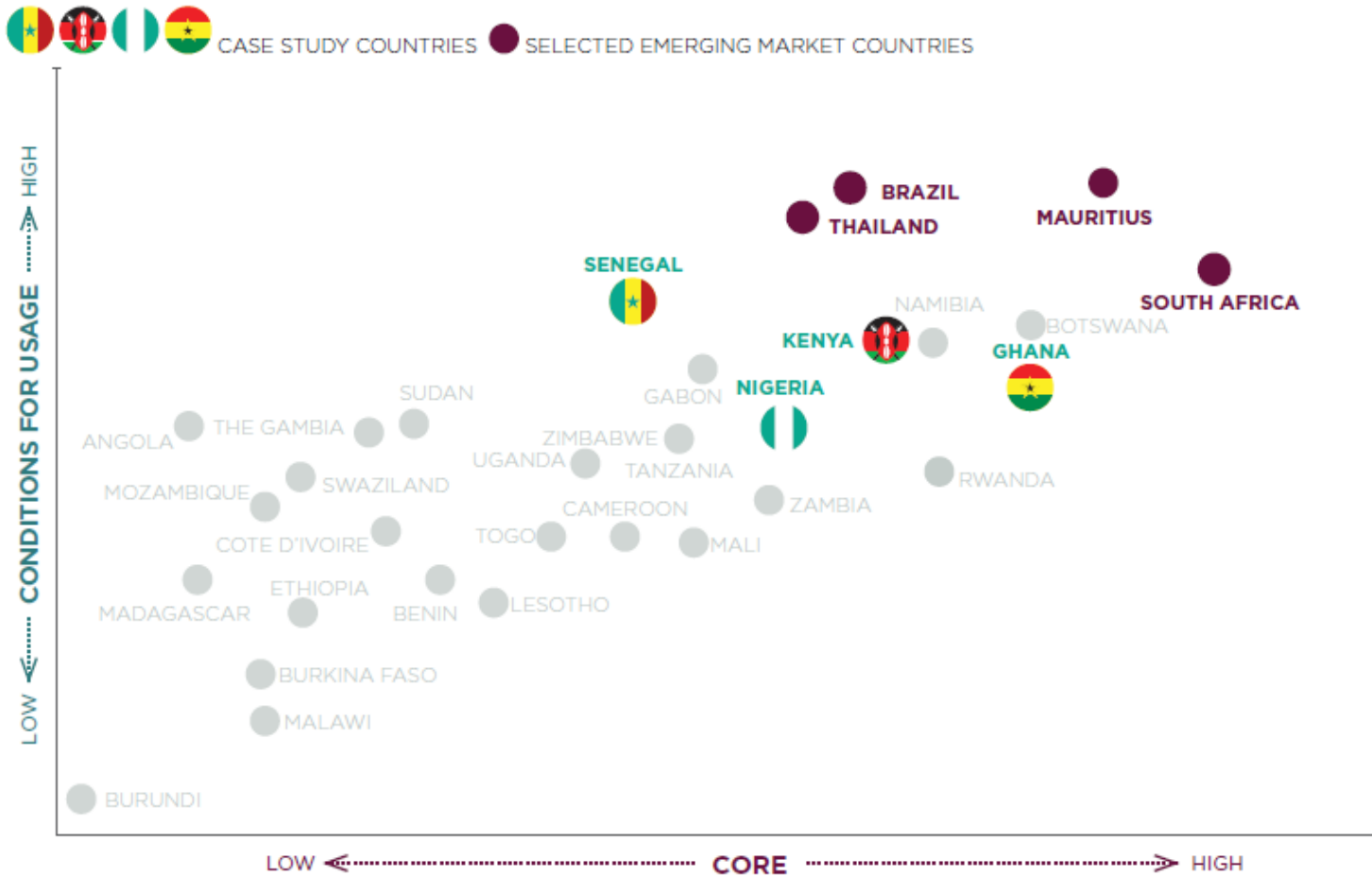


Internal and extraneous drivers and variables in HE all inter-related

Times Higher Education	QS Top Universities	ARWU
<ul style="list-style-type: none"> Teaching (30%) Research: volume, income and reputation (30%) Citations: research influence (30%) Industry income – innovation (2.5%) International outlook – staff, students and research (7.5%) 	<ul style="list-style-type: none"> Academic Peer Review (40%) Global Employer Review (10%) Faculty/Student ratio (20%) Citations per faculty (20%) International faculty ratio (5%) International student ratio (5%) 	<ul style="list-style-type: none"> Education: Alumni winning Nobel Prizes and Fields Medals (10%) Faculty: Staff winning Nobel Prizes and Fields Medals (20%) Highly cited researchers in 21 categories (20%) Research – papers in Nature and Science (20%) Papers indexed in Science/ Social Science Citation (20%) Per Capita academic performance (10%)

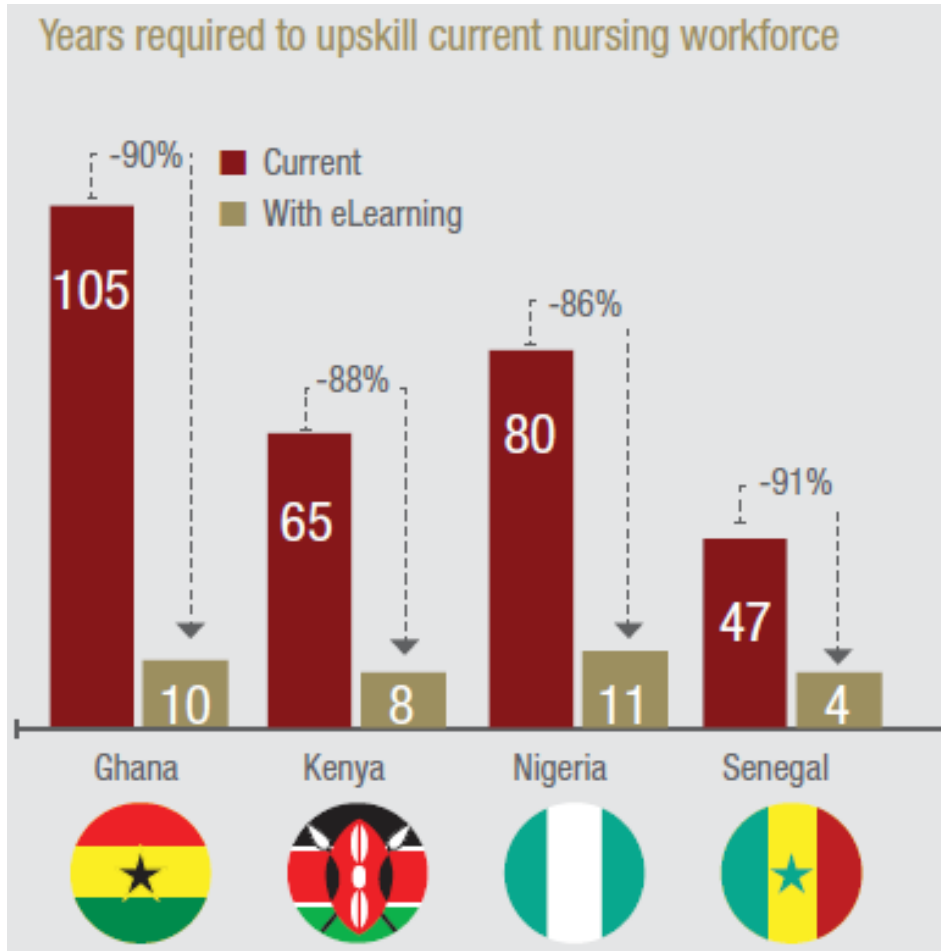
- Global rankings of HE institutions and criteria are useful key performance indicators

5. Identify Specific Implementation Measures to Achieve Goal



Source: Dalberg, Impact of the Internet on Africa, April 2013

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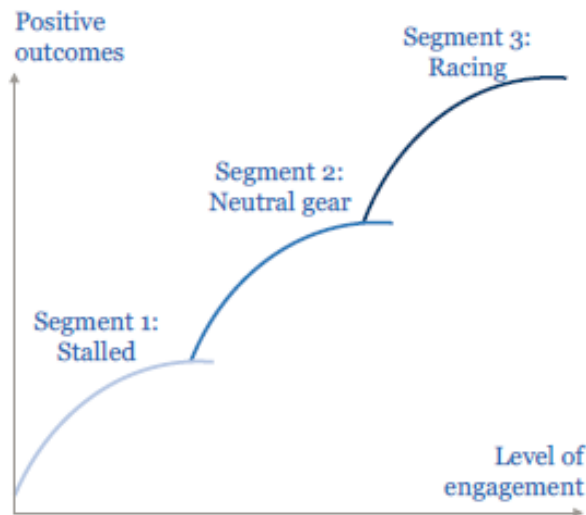
eLearning changes the parameters and timeline horizons for capacity building in higher education and is impacting the Globe at an exponential rate

6. Identify Measures to Facilitate HE Understanding of Business Skills Requirements

- Chambers of business, commerce and member organisations
- Professional organisations (e.g. SAICA, CFA)
- Economic imperative for business (survival, growth)
- **SMME sector (entrepreneurs)**
- Local, Regional, National, Global impact
- The changing nature of work, jobs and careers in the 21st Century

Identify Critical Mechanisms to Build Partnerships and Facilitate Job Creation

Three distinct segments of employers exist, with more engagement related to better outcomes



Size of segment

- 44% of employers
- 25% of employers
- 31% of employers

Profile

- Least likely to engage with youth or providers, or to do so with intensity
- Most likely to say skill issues have a detrimental impact
- Engage frequently with youth and providers, with high intensity
- Least likely to say skill issues have a detrimental impact

SOURCE: McKinsey survey, Aug-Sept 2012

Employer and education provider perspectives on skill importance and competence

■ Competence
■ Importance

Employer and provider perspectives on youth skills¹

% of respondents responding 8 or higher out of 10

	Employer rating of competence and importance	Provider rating of competence and importance
Work ethic	65 80	70 83
Teamwork	65 79	69 81
Local language ²	65 73	73 77
Oral communications	55 73	65 81
Hands-on training in discipline	54 69	69 79
Problem solving	46 66	63 79
Written communications	49 64	63 81
Creativity	50 63	62 72
Computer literacy	53 63	69 81
Theoretical training in discipline	50 63	69 73
Basic math	49 60	59 71
Leadership	45 58	57 67
English proficiency ²	40 53	55 73

¹ Please rate how competent new hires are on average on a scale of 0 to 10, where 0 means not competent at all on this aspect and 10 means extremely competent on this aspect. Please rate how important these skills are for new hires to have in order to be effective at your company. We will again use a scale of 0 to 10, where 0 means not important at all in order to be effective and 10 means extremely important in order to be effective.

² Local language was only asked outside US and UK, and English proficiency was asked in all countries even when language of business was not English.

SOURCE: McKinsey survey, Aug-Sept 2012

Identify Critical Mechanisms to Build Partnerships and Facilitate Job Creation

Isis Enterprise

We link technology providers with technology seekers



Often with support from governments, research funders etc.

Key Performance Indicators (KPI's) (NDP Proposals)

NDP

1. Improve the qualifications of academic staff

Increase percentage of PhD qualified staff from current 34 percent to over 75 percent by 2030.

2. Increase the throughput undergraduate rate

The number of graduates will increase from the combined total of 167 469 for private and public higher education institutions to 425 000 by 2030. As part of this target, the number of science, technology, engineering and mathematics graduates should increase significantly.

3. Increase the number of Masters and PhD students

By 2030 over 25 percent of university enrolments should be at postgraduate level. International exchange partnerships should be pursued and encouraged.

WHITE PAPER

1. Expand student access

2. Research and innovation for development

3. Staffing

4. Integration (including community engagement and internationalisation)