DAAD LUNCH DEBATE

The Need for Quality Education for Africa's Development

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"Quality Higher Education: a Prerequisite for Africa's Development?"

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Outline of Presentation

- Higher Education and Africa's Development
- Engineering and Africa's Development
- Quality Engg Education: Challenges
- Accreditation
- Regional Initiatives
- Conclusions

Higher Education and Africa's Development

- In 1980s and 1990s, importance of HE for development in Africa was questioned; emphasis on basic education & minimal support to HE
- Change started as from UNESCO WCHE in 1998
- Now research showing that HE yields highest return on investment/year than any other education sector
- HE is important but it is Quality HE that will make the difference. Mass HE is of limited use if it is not of Quality.
- Presentation will look at importance of Quality in HE using Engineering as an example, but it applies to all other areas – medicine, law, accountancy, pure sciences, economics, humanities, social sciences.

Engineering and Africa's Development *(III)*

- Africa's impressive growth over last decade, which will continue over next decade
- Engineers required to accompany this growth & development:
  - Infrastructural development
  - Industrial development – net importers of manufactured goods
  - Meeting energy needs
  - Taking control of mining natural resources & refining them
  - Accelerating SD, especially in rural areas

Engineering and Africa's Development *(1/2)*

- Several recent studies on engineering in Africa [2010 UNESCO report on Engineering, 2012 Report of Royal Academy of Engineering] reveal two important facts:
  - There is an acute shortage of engineers in Africa and this may have a serious impact on its development – in many cases countries have to import expertise
  - Yet, paradoxically, many countries report unemployment of engineering graduates.
- Many reasons but a major one is the poor quality of graduates, lacking practical skills.

Quality Engg Education: Challenges *(1/6)*

Main Challenges in provision of quality engineering graduates are:

a. Infrastructure & Laboratories
b. Curricula
c. Teaching & Learning
d. Engineering Academic Staff
e. Linkages with Industry

Quality Engg Education: Challenges *(2/6)*

a) Infrastructure and Laboratories

- Large enrolment in engineering courses not accompanied by expansion of physical infrastructure
- Insufficient & poorly equipped laboratories
- Limited opportunities for individual students to carry out practicals – often they are mere spectators
- Obsolete and non-functional equipment, with no local expertise to repair them
- Poor library facilities
- Poor access to ICT, vital for engineering teaching & learning

Quality Engg Education: Challenges *(3/6)*

b) Curricula

- Curricula usually out of date, often copied from those in North
- Not relevant to African context, specially not applicable to rural areas – where 60% of population live & where development challenges are greatest
- Industry & other stakeholders rarely consulted – curricula reform regarded as an academic exercise
- The Tuning process can make a huge difference. Not surprising that 2 of the 5 subjects in the pilot Tuning Africa project are in Engineering

Quality Engg Education: Challenges *(4/6)*

c) Teaching and Learning

- Magisterial mode widely used. Because of large numbers, no opportunity for interacting with lecturer or among students. Group seminars hardly ever used.
- Library books very limited, students have to rely on lecturer's notes
- Use of mini projects or Problem Based Learning rarely used – yet these help in acquiring soft skills
- Growing tendency for final year project to be purely theoretical rather than practical and experiment-based

Quality Engg Education: Challenges *(5/6)*

d) Engineering Academic Staff

- Severe shortage of staff
- Have not undergone any pedagogical training
- May have a PhD but have hardly any industrial experience - is PhD really necessary for all Engineering staff?
- Practising engineers who are good in teaching are rarely available to serve as part-time lecturers

Quality Engg Education: Challenges *(6/6)*

e) Linkages with Industry

- Recent AAU study show generally poor university-industry linkages
- Such linkages vital for practical training of students during their courses – also helps to eventually find employment
- Many universities giving up short-term industrial attachments because of difficulty in placing large numbers of students
- Industry also find it difficult to supervise students
- Poor industrial environment in Africa is a handicap

Accreditation *(1/2)*

- Accreditation of engineering qualifications vital because of nature of the profession and risks involved, and is a hallmark quality
- Some African countries have developed effective, independent engineering accreditation bodies, e.g Engineering Council of South Africa (ECSA), Council for Registration of Engineers in Nigeria (COREN), Engineering Registration Board of Kenya
- A 1999/2000 survey showed that of the 129 universities offering engineering degrees in Nigeria, only 21 were fully accredited by COREN.
- In 2011, ERB of Kenya refused to recognise the engineering degrees of 3 public universities

Accreditation *(2/2)*

- Majority of other countries have established an accreditation body but it lacks resources and expertise and is not effective
- International accreditation bodies exist (Washington Accord, ABET) but they are very expensive and may not be appropriate for Africa
- Need for collaboration at sub-regional and regional levels in accreditation of engineering qualifications
- Some initiatives already on the way. CAMES serves as accreditation body for 18 Francophone countries. ERBs of Kenya, Tanzania & Uganda have signed a Mutual Recognition Agreement. ECSA is assisting Botswana & Namibia in strengthening their accreditation bodies

Regional Initiatives *(1/2)*

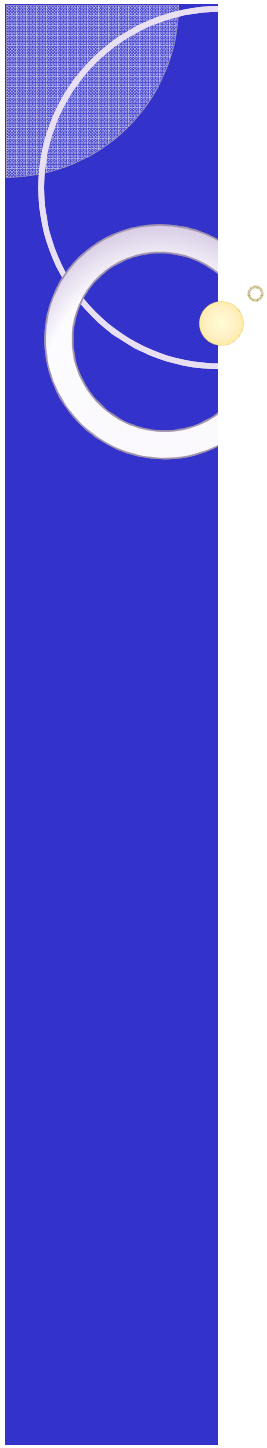
- Several regional initiatives, some quite recently launched, exist to improve engineering education and training in Africa, e.g.
  - African Network for Scientific and Technological Institutions (ANSTI) (1980): institutional collaboration and networking
  - UNESCO Engineering Initiative (2011,following 2010 UNESCO Report): curricula reform, QA, accreditation, etc.
  - Tuning Africa Project (2012): curricula reform, involving over 20 Engg Faculties

Regional Initiatives *(2/2)*

- African Engineering Education Association (2006): promote networking among engineering educators
- International Institute for Water and Environmental Engineering (2iE) in Burkina Faso (2007): close linkages with industry, graduate employment
- Africa-UK Engineering Partnership for Development (2012): curricula reform

Conclusions

- Africa's HE sector needs to expand and enrolment in HE must continue to increase, especially in S&T
- However, it is essential not to compromise on quality and relevance as this takes place
- Only quality skilled human resources can help in achieving Africa's development
- Africa will continue to need external support in its quest for quality HE expansion; however emphasis must be given to sustainability of initiatives & to sub-regional & regional collaboration
- Global ranking not to be used as an objective for achieving Quality in Africa



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