World Federation of Engineering Organisations (WFEO)

GLOBAL AVIATION GENDER SUMMIT

Presented by

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Vice President : World Federation of Engineering Organisations

Chair: Engineering Capacity Building Committee

Executive Dean: Business, Engineering and Technology

Monash South Africa

WFEO Standing Technical Commitees

- ❑ Engineering and the Environment

- ❑ Education in Engineering

- ❑ Information and Communication

- ❑ Disaster Risk Management

- ❑ Engineering Capacity Building

- ❑ Energy

- ❑ Women in Engineering

- ❑ Ethics/Anti-Corruption

- ❑ Young Engineers/Future Engineers

Engineering Capacity Building

- There is a strong relationship between a critical mass of educated and skilled engineering and science graduates and economic and social development

- Timing: preparing future skills by acting in the present

- Are we preparing adequately, and do we understand the changing context?

Capacity Building: The Context

- The Need for more Engineering Capacity and Capability in the Aviation Industry

- Engineering: The need for Capacity Building – The numbers : Africa / Ratio of Engineers to Population

- International Mobility / Recognition of Professional Status and Educational Standards

- Timing: preparing future skills by acting in the present

- Are we preparing adequately, and do we understand the changing context?

NEW TECH DESTROYS JOBS
Whilst changing the nature of work and employment

Lost in my lifetime:

Typists
Dockers
Milkman
Blacksmith
Secretaries
Drawing office
Xerox operator
Elevator operator
Computer operator
Telephone operator
Comptometer operator
Financial report writers
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Lost in your lifetime:

Testers
Tasters
Analysts
Advisors
Educators
Reporters
Strategists
Call centres
Report writers
Personal bankers
Personal assistants
Answering services

Investment bankers
Warehouse People
Personal Assistant
Tech support
Stock Trader
Receptionist
Forecasters
Train driver
Researcher
Journalist
Drivers
Pilots
++++

TECH CREATES/ENHANCES JOBS
Whilst changing the nature of life, work & employment

Jobs to come:

Material Programmer	3/4D Designer
Recycling Designers	Risk Profilers
Interface Designers	Cyborg Engineer
Machine Mediators	Protein Designer
Wisdom Archivists	Crime Predictor
Genome Designer	Digital Historian
Material Designer	Information Caretaker
Wisdom Monitors	Truth Engine Mediator
Trouble Shooters	Component Repurposer
Nano-Engineers	Genome-Protein Activators
Bio-Engineers	

Jobs to Be enhanced:

Fabricator	Complexity analysts
Geneticist	Security Experts
Generalist	Entrepreneurs
Proteomist	Technologists
Multi-designer	Consultants
Problem solver	Architects
Longevity advisor	Detectives
Big Data Analyst	Designers
Cellular programmer	Engineers
Material programmer	Modellers
	Scientists
	Medics

The Place for Gender, The Place for Humans:
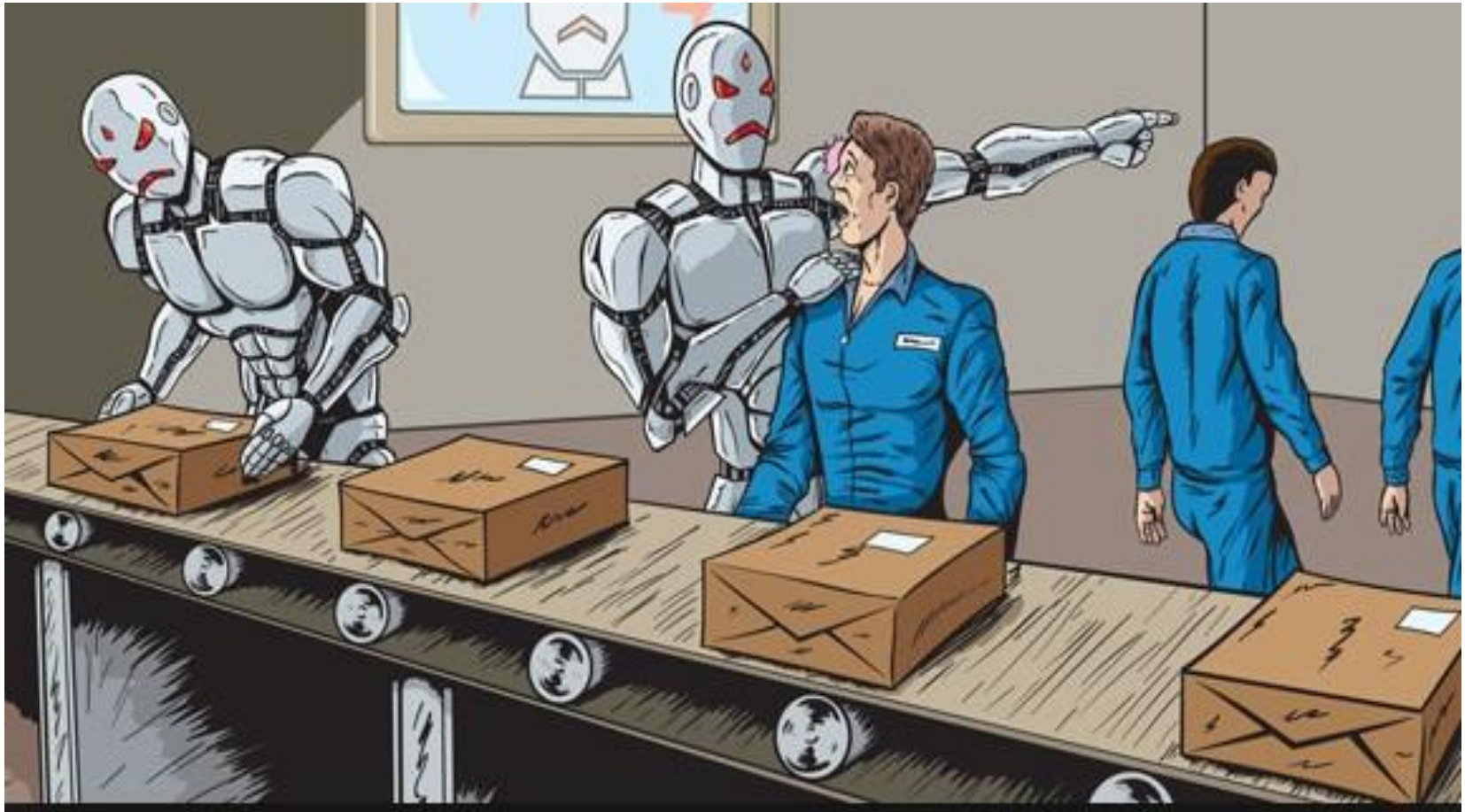
The New Reality

- Technology Explosion
- Interconnected World
- New Reality
- New Opportunities
- New Required Competencies
- How do we prepare for this

Capacity Building: Pipelining

- Education pipelining requires planning, as Engineering capability takes time to develop
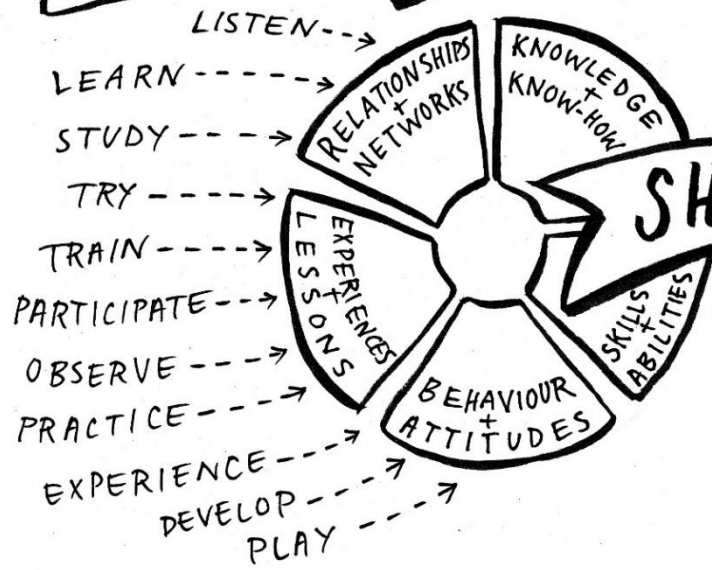
- Looking beyond the current competencies
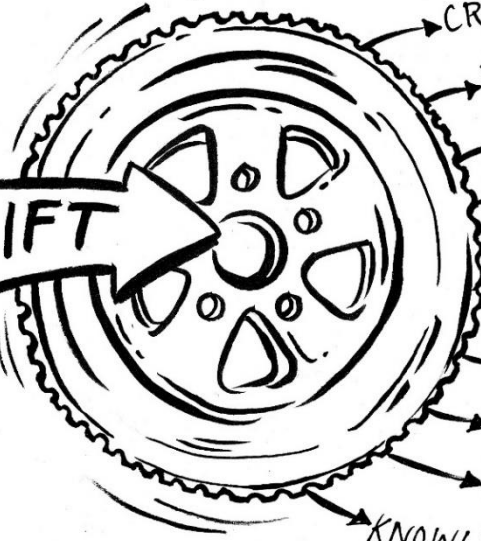
STEM Education of the Future

- Accessible, Flexible, Innovative, Focused

- Broad base, modular focused delivery

- From programmes to competencies

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Mobile Enabled Capability Realisation

EXPERIENTIAL COMPETENCY DEVELOPMENT

CRITICAL KNOWLEDGE TRANSFER™

CAPABILITY REALISATION

LISTEN→
LEARN→
STUDY→
TRY→
TRAIN→
PARTICIPATE→
OBSERVE→
PRACTICE→
EXPERIENCE→
DEVELOP→
PLAY→

RELATIONSHIPS + NETWORKS
KNOWLEDGE + KNOW-HOW
EXPERIENCES + LESSONS
BEHAVIOUR + ATTITUDES
SKILLS + ABILITIES

SHIFT

CRITICAL THINKING
BEST PRACTICE
CONFIDENT
CAPABLE
CAN DO
CA...
CAN CORRECT
CAN IMPROVE
KNOWLEDGE NETWORK

CONTENT DRIVEN > TO > CONTEXT DRIVEN

DATA & INFORMATION

KNOWLEDGE & WISDOM

- Strength of Network
- Weak Ties
- Echo Trust
- Multiplier Effect

Emerging Skills/Competence Areas

- Design / Engineering Thinking

- Interpretation / Reflection

- Problem Identification Solution Creation

- Creativity, Innovation, Design and Entrepreneurship

- Ethics and Responsibility

- Resourcing, and Aligned Networking

- Technology Adaptability

- **Intercultural Competence**

  - **(UNESCO Framework)**

  Understanding Complexity and Value, Leverage Diversity

Intercultural Competence Communication

"All communication is more or less cross-cultural. We need to use language as we grow up, and growing up in different parts of the country, having different ethnic, religious, or class backgrounds, even just being male or female – all result in different ways of talking."

Prof. Deborah Tannen: Academic of Linguistics

Socio-Economic Development : The Role of Academia

Prepare People for Job Employment

Vs

People for Job Creation with Value

Programmes to increase Employability

The Statistics

1. Bias Behavior
2. % of employed vs population
3. Improvement in GDP: Inclusive policies
4. School Drop-outs per gender
5. Salaries / Gender
6. Leadership and Management

The Statistics

"All the evidence tells us that not to empower women is a tragically missed opportunity, not only to create a more just and more prosperous society, but also to advance rural well being"

James D. Wolfenson

"Statistics only derive its value when it is acted upon: We need to move beyond the statistics"

Breaking the Inequality : Human Values Inclusivity and Diversity

- The Popular view is not necessarily the "Right" View
- What is considered a Balanced Society and the Role of Woman and Men in Society (and now Technology): How do we determine this?
- Moving beyond the stereotypes, unfair judgements, societal pressures, discrimination, prejudice at "work" and beyond
- Equal Respect and acknowledgment for all Roles in the "workplace" and all societal responsibilities for men and women: Responsible, Equality, and Freedom of Choice: Human Values: Gender Inequality is a Societal Problem: So what should be the role of Women and Men in addressing this?

Transforming the Education Landscape: Proposals

- We need to invest to improve the pipeline of Women in the Engineering Professions (Introduce Capacity Building Programmes with specific focus on women)
- Strong access policies in Education (Technological and Business Skills)
- Introduce Programmes in Education Systems to bring awareness of the Engineering Paradigms at early stages of influence of Career Choices :Specialisation levels (Water, Chemical Vs Mechanical and Electrical)

Transforming the Education Landscape: Proposals

- Market Re-Entry, the leaking pipeline in Engineering : Introduce Policies and Programmes also in Education
- Introduce Systematic Programmes in Engineering with specific focus on Innovation, Business Development and Entrepreneurship and must incorporate new age competencies
- Incorporate Intercultural Competence Programmes systematical at all levels of Educational Systems

Respect for all Roles

Acknowledge the Possibilities

Turning Possibilities for Women into Reality