



Knowledge Exchange Seminar Series (KESS)

...is a forum that encourages debate on a wide range of research findings, with the overall aim of promoting evidence-based policy and law-making within Northern Ireland



‘Realising potential; Widening participation in Science and Technology’

Nigel Mason,
The Open University

STEM and Economic Growth

The Science and Technology Sector **in UK:**

- S & T higher than average productivity
- 65% of UK exports from high tech firms
- S & T contributes disproportionately to GVA
- Key to UK international competitiveness



STEM and NI Economic Growth

The Science and Technology Sector in NI:

- Science and technology based companies form the backbone of exports from NI
- STEM based exports > £4.5bn in 2009/10 (InvestNI)
- NI has lower GVA per employee (80% UK) increase in STEM = increase mean GVA



STEM Areas for Growth

STEM Areas for growth HM Treasury and BIS, 2010

- Advanced Manufacturing
- Low carbon industries
- Space
- Life sciences



STEM Areas for Growth

STEM Areas for growth designated by **MATRIX NI**

- Life and Health
- ICT
- Agro-food
- Advanced Materials
- Advanced Engineering (Transport)



The STEM Gap

UK and NI face a STEM skills shortage

- UK workforce 4.138 M with STEM Professional
- 1.9 M technicians
- 3.615M economically active (low unemployment 4%)
- Need 830,000 graduate level STEM experts 450,000 technicians **by 2020**
- 100,000 STEM Graduates needed per annum to maintain status quo

STEM International

- UK graduates 90,000 STEM per annum
- India 700,000 !
- In engineering UK 23,000 graduates
- India x 8 and China x 20



STEM NI

- NI 65, 590 NI domiciled students 2011/12
- 45% study STEM or ~29,500

But

- 66% at HEI in NI
 - 27% at HEI in GB
 - 7% at OU
-
- More students leave NI than a decade ago
 - NI business identifies Skills shortage



STEM: Filling the gap

UK and NI to widen the participation in STEM
from under represented areas

- Gender
- 13% women in STEM workforce (non medicine)
- Only 6% UK Engineers
- Gender imbalance starts at School (A level) though more women do STEM in NI at A level

STEM: Filling the gap

UK and NI to widen the participation in STEM
from under represented areas

- Ethnic groups
- Low uptake by Asian and Black (African Caribbean)
- Disability
- Engineering 12% cf 20% working population
-
- STEM under-represented in lower socio-economic groups



STEM Action Agenda

- Mobilise workforce
- Education
- WISE;
- IOP Ireland
- MATRIX STEM ambassadors
- Retain Women in Science
- Career opportunity (Return after career break)

STEM Action Agenda

- Mobilise workforce
- **Retain Women in Science**
- Career opportunity (Return after career break)
- Industry opportunities (fewer women lead STEM business on Boards etc)
- Role Models

STEM Action Agenda

- Mobilise workforce
- Develop STEM uptake in lower socio economic groups
- Improve ethnic diversity
- Develop Stem uptake in disability students
this requires
- Less traditional STEM HE (Apprenticeship and OU)





Northern Ireland
Assembly



The Open University



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