Realising potential; Widening participation in Science and Technology

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

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 $\times 8$ and China $\times 20$
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 Carribbean)
- 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)
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