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Can FE colleges deliver the skilled people the economy needs?

Philip Greenish
The Royal Academy of Engineering



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To address the question

- Needs of the economy now and in the future
- Nature and capacity of the FE system
- The match between present provision and future needs of industry
- How FE needs to change



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The economic need

National Skills Audit 2010 (UKCES):

- predicts growth of highly skilled work
- decline in lower skilled jobs
- importance of increased skill levels for future growth
- ageing workforce



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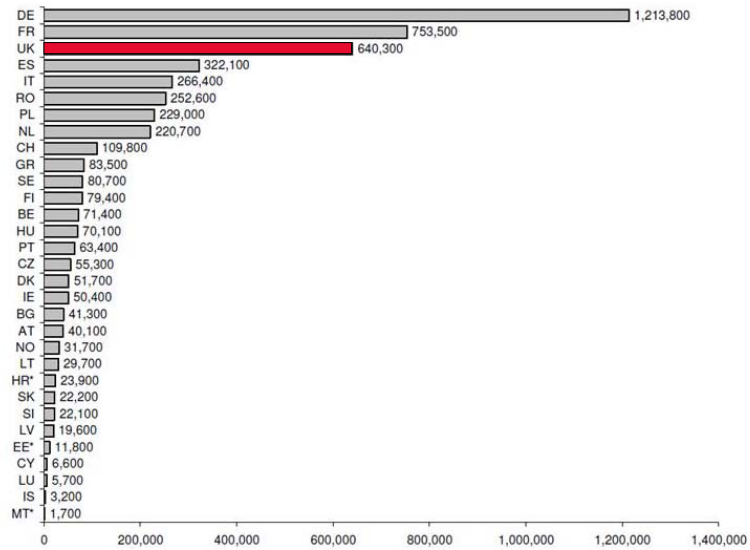
The economic need

The engineering sector:

- 19.6% of GDP – employment of 4.5M people
- over 500,000 engineering businesses in 2008
(just over half in construction)
- Engineering and manufacturing contribute £850bn pa
- 53% of export earnings (34% from high tech)



Fig. 1 – Employed engineering workers in 2007

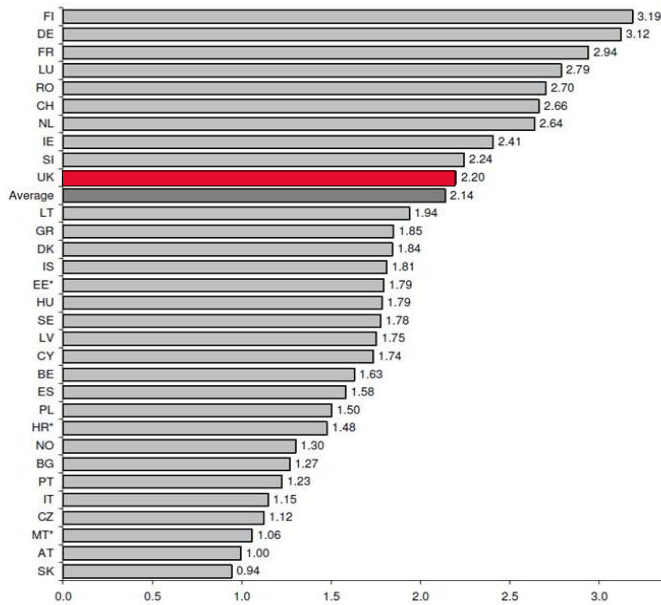


* Data reliability limited due to small sample size.

Source: Eurostat 2009a



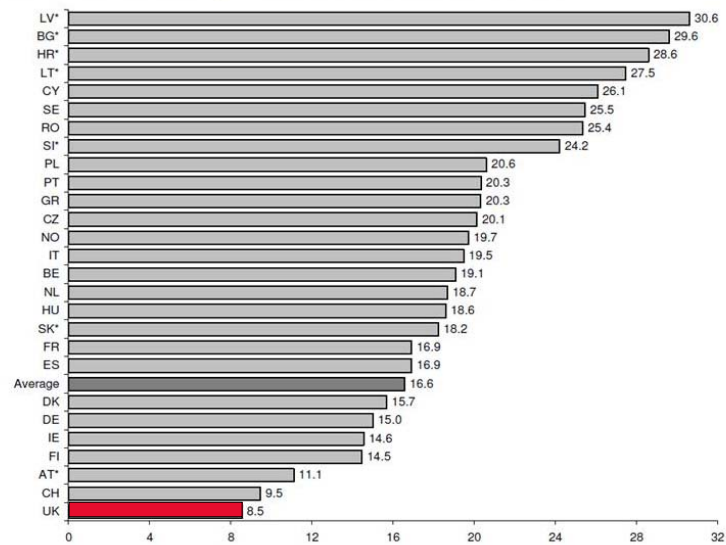
Fig. 2 – Share of employed engineering workers among all employees in 2007



Source: Eurostat 2009a



Fig. 3 – Female employed engineering workers as a share of the total in 2007



* Data reliability limited due to small sample size.
Numbers rounded.

Source: Eurostat 2009a



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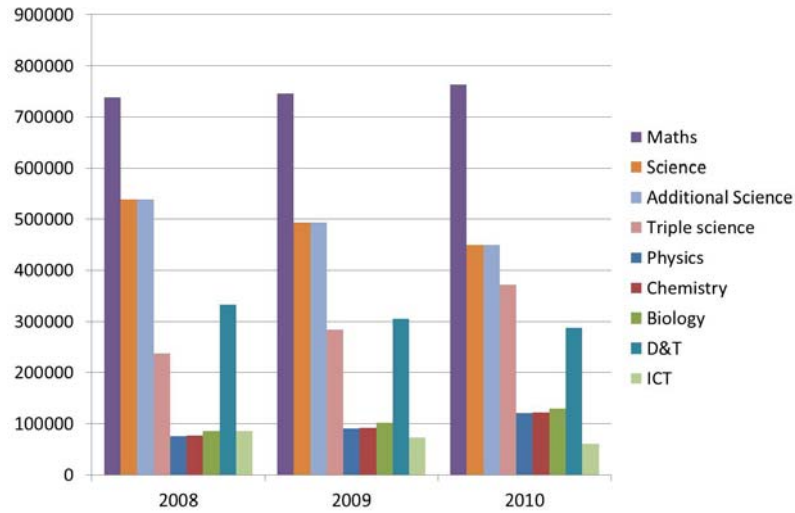
Demand for Engineers in the UK

- UKCES *Working futures 3*: UK manufacturing will need over 580,000 new workers by 2017
- DECC: Renewables could create 500,000 jobs by 2020
- Major infrastructure: Crossrail, fibre-optic broadband, nuclear new build, high speed rail, offshore wind
- What does industry say?



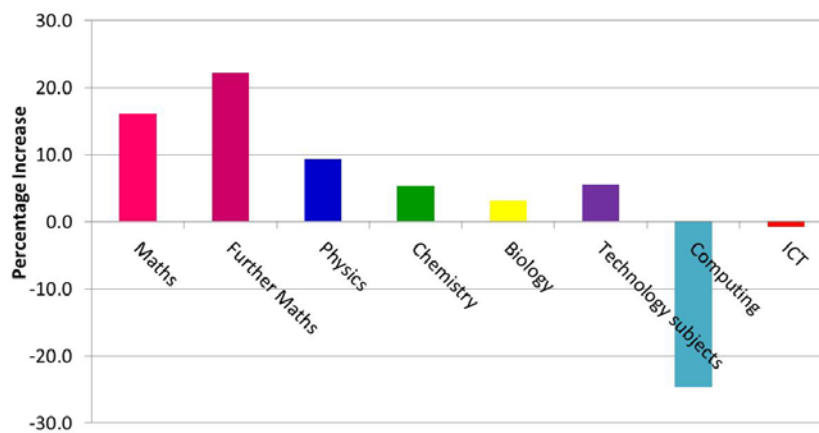
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STEM GCSEs: 2008-2010



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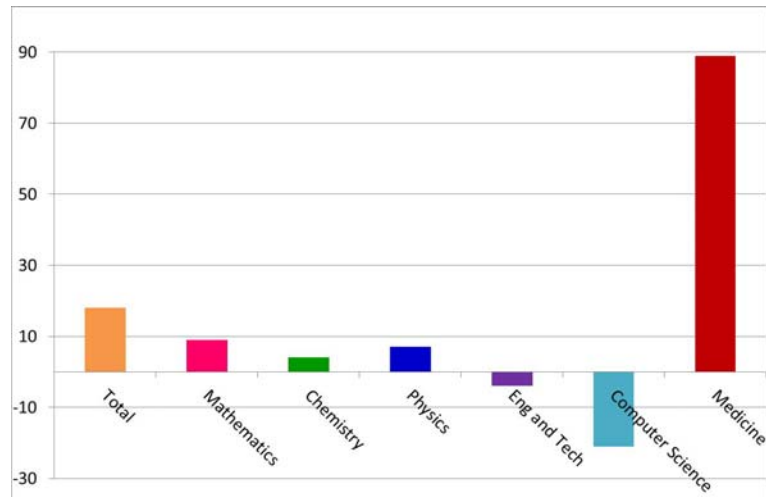
STEM A levels: 2008-2010





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STEM higher education: 1999-2008



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FE STEM data project

- A mapping of FE colleges' and training providers' qualifications, learners and teaching workforce in STEM subject areas



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The further education system

The FE sector is big

- 4.7 Million people participated in FE across all subjects in England in 2008
- There are over 5,000 registered FE providers in England
- 425 FE Colleges in UK (131 HE Institutions)



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The further education system

The FE sector is complex

- There are over 9,000 STEM qualifications available to learners in the FE sector
- Many different levels and types of qualification
- There is limited information for learners and employers on quality, wage returns and value



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The further education system

The FE sector caters for many needs

- Learners range in age from 14 – 80
- Many levels of qualification - basic literacy/numeracy to Foundation Degrees *and beyond*
- Courses range in length from a few hours to multi-year
- Many different types of provision



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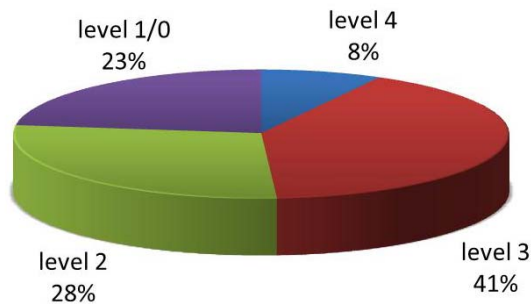
FE STEM data: *Key findings*



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FE levels of qualifications

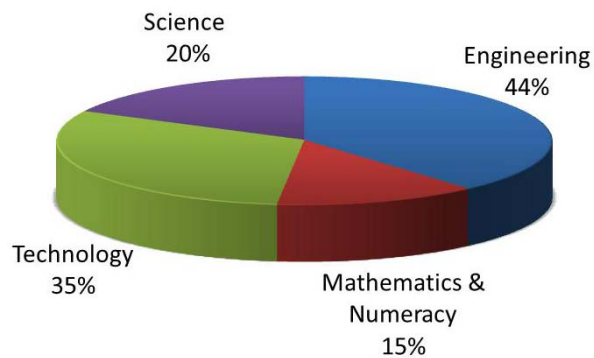
- In the last two academic years, the STEM qualifications **on offer** in the FE and Skills sector in England were:



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FE qualifications by discipline

- By subject area, the qualifications **on offer** in STEM disciplines were:

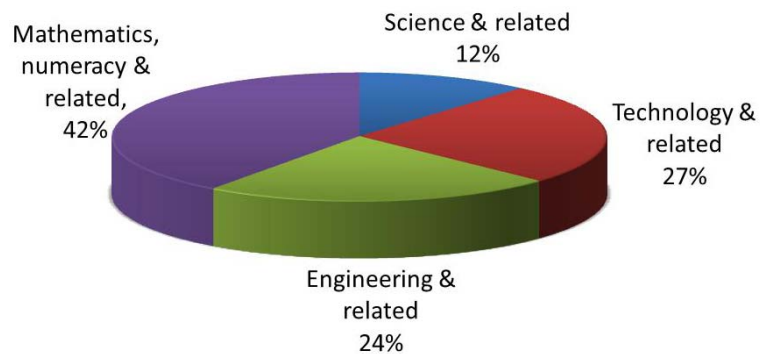




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FE enrolments in STEM

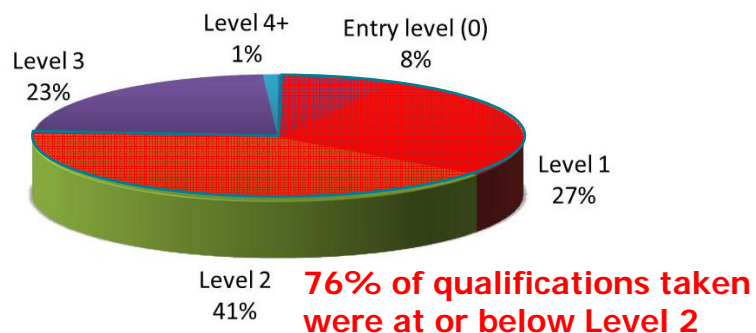
- Of the STEM qualifications **being taken** in England:



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FE enrolments in STEM

- Of the 3.2 million **enrolments** on STEM qualifications in the FE and Skills sector in England:

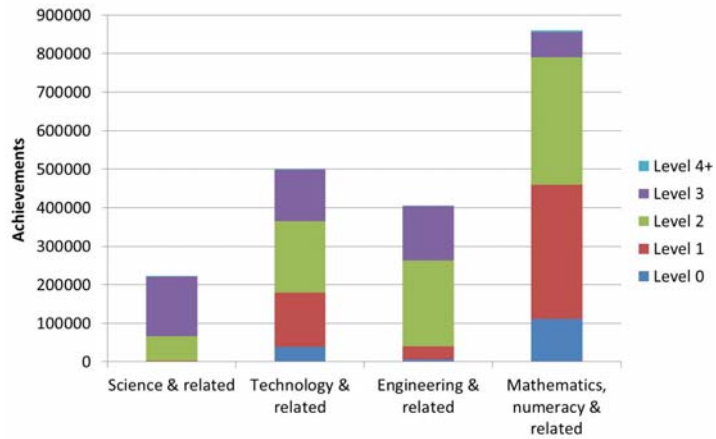




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FE achievements in STEM

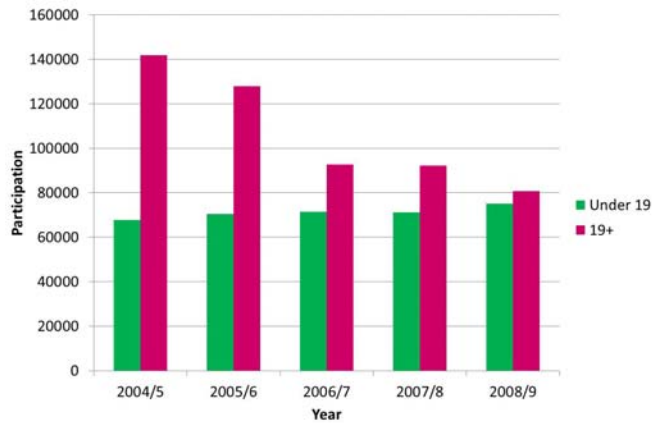
- Of the qualifications **achieved** in 2008/09:



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FE enrolments in STEM

- Trends of participation in engineering subjects '04-'09

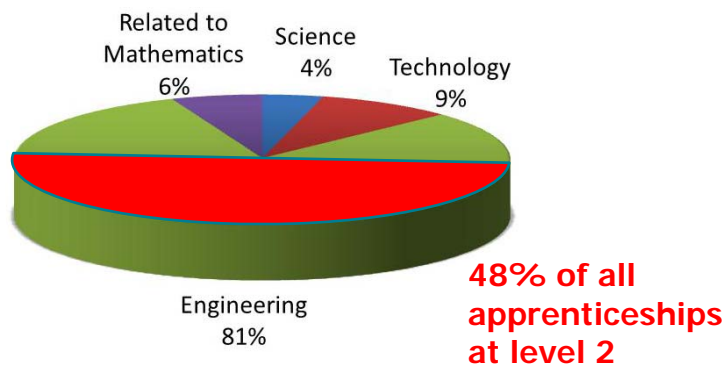




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FE apprenticeships in STEM

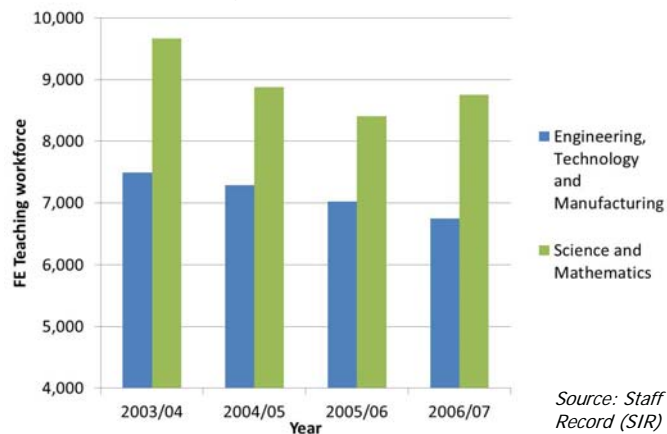
Of 170,000 Apprenticeships underway in 2008/09:



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FE STEM workforce

- There is a declining number of STEM teachers in FE





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International comparators of FE

- EU states: nationally available programmes leading to Level 3 with a platform for progression to Level 4
- France, Sweden, Austria, Denmark: Level 3 the norm
- Germany:
 - full time vocational programmes prepare for apprenticeships
 - technicians are expected to study to level 4



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The Samuelson report

“Germany 30 years ago was simply nowhere....the Germans had been following the English step by step, importing their machinery and tools

...copying their methods of work and the organisation of their industries; but, besides this, **they had devoted special attention to a matter which England had almost ignored: the scientific or technical instruction of their own people”**



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Royal Commission on Technical Education 1882



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Key messages from FE research

- Not enough focus on high level qualifications
- Trend of decline in enrolments in engineering and manufacturing subjects
- Trend of decline in FE STEM teaching workforce



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Conclusions

- high-tech, high-value sectors increasingly important in UK future economic performance
- The UK is behind competitors intermediate and lower level skills and at risk of dropping further
- Compelling economic case for improving provision of intermediate skills
- There is an incoherent offering post-16. It's confusing to students, to careers advisers, parents and to employers



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What needs to change?

- The funding mechanism should incentivise progression to Level 3+
- Greater focus on high-quality, long-duration Level 3 and 4 qualifications
- Should be clear which qualifications employers value
- Make efforts to support expert teaching workforce
- FE sector must maintain its inclusivity, offering opportunities for progression at all stages of life