

The National Engineering Programme and its London Engineering Project pilot

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Engineering, and the technology it creates, is shaping
our world



BUT

The formation of new
engineers remains difficult.
The UK economy could
easily absorb many more
every year.

**THIS IS DESPITE
ENGINEERING BEING**

An attractive, well paid,
respected profession

The London Engineering Project works in both schools and universities



To enhance the engineering higher education offer.

To find and support local students who could take up that offer.

To engage employers directly in the formation of new engineers.



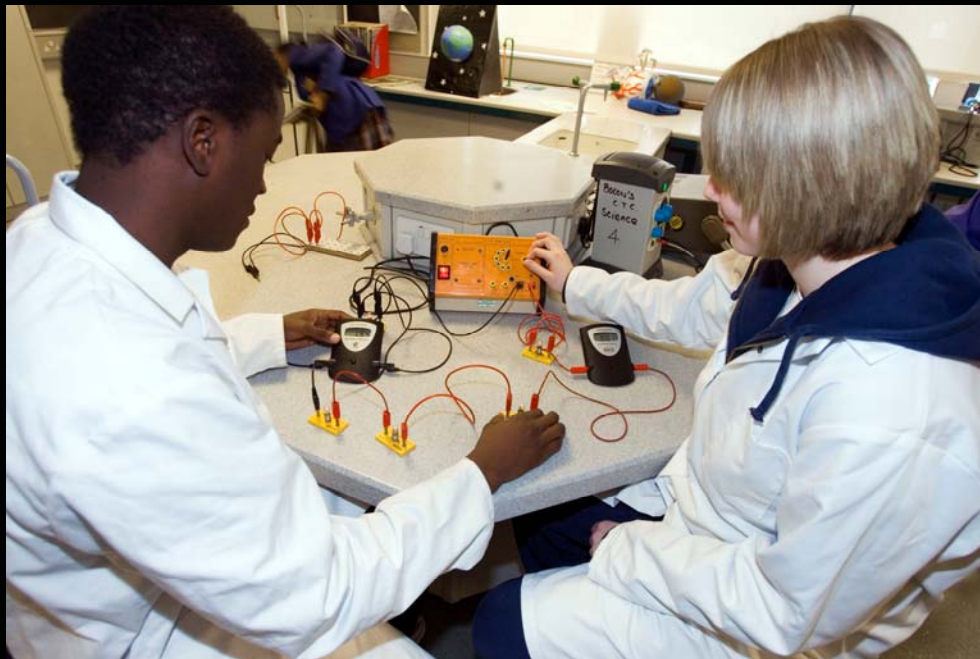
Our work with partner HEIs means:

Creating new courses where appropriate.

Developing the student experience – no more ‘deferred gratification’

Engaging with employers

Sharing our findings widely



Current HE partners:

Cambridge & MIT (CMI),
Liverpool, London South
Bank, Loughborough
(Engineering Subject
Centre) Sussex, UCL,

Our approach is to seek out those currently missing from engineering



Important themes:

Everything we do is gender appropriate and culturally relevant.

We are building our legacy in vibrant degree courses, lively science and maths in our schools, and sustained employer engagement.



Progression into engineering HE means:

Enthusing the very young.

Supporting school students with promise and giving good advice.

Offering attractive, relevant degree courses.

Having employers say 'we want to recruit people just like you...'

Enthusing the young

Policy & demand drivers:

- Next Steps document & the STEM Programme Report
- Skills shortages in industry, recognised by Sector Skills Councils (funded by DfES through the LSC), the engineering profession (including the Academy funded through DTI), Treasury
- Poor recruitment to engineering higher education, recognised by universities, UCAS, HESA, Universities UK, HEFCE and the Academy
- Recognition that good engineering practice is under-pinned by effective science and math learning in schools
- Enthusing the young enabled typically by 85% funding from industry / charity and 15% from government

Enthusing the young through teachers:

- Initial teacher training
- Teacher CPD
- Teach First (engineering graduates teach before taking up engineering practice)

Enthusing the young directly:

- Hands-on engineering activities in schools, coordinated by the Academy led Shape the Future process
- Delivered locally by SETpoints and Education & Business Partnerships (EBPs) and delivery coordinated regionally and nationally by SETNET
- Enabled by Science & Engineering Ambassadors

22,000 primary schools
4,500 secondary schools
500,000 students in every year group (approx. across UK)
4,000,000 students could benefit from the engineering message
currently <250,000 do

Attainment and progression at school

Problem definition:

The National Curriculum, the school accountability framework (league tables) and OFSTED have driven exam and standard test attainment but not necessarily progression in science and maths beyond the age of 16. 80+ % drop out of science and maths at 16.

The A Level science and maths hurdle:

Students with A* or A in science or maths GCSE are 85+% likely to continue that subject at A level. Students with a C grade at GCSE are <5% likely. Teacher and careers advice is important in the process. Schools Science Board (DfES) is charged with increasing the number of specialist physics, maths and chemistry teachers.

As a result

- A level physics registrations halved over 20 years (currently 23,000 and falling)
- A Level maths registrations down on historical levels (currently 50,000) but rising again now
- A Level chemistry registrations down (currently 35,000) but rising again now
- A Level biology registrations holding (currently 47,000)

The vocational route to A Level science and maths equivalents:

FE colleges are retreating from A Level provision in many areas of the country. Smaller 6th forms are merging into larger community 6th form colleges. City Academies change local 6th form dynamics.

FE colleges remain committed to level 3 (A Level equivalent) engineering provision

- BTEC, HNC
- 14-19 Engineering Diploma from 2008 (30,000 students are anticipated)

KEY

Mentoring

Club

Industry/HE link

Courses

Event

What we do in the London Engineering Project pilot

HIGH

STUDENT ENGAGEMENT

LOW

New & revised MEng / BEng courses

New Foundation Degree courses

Year in Industry

Mentoring and e-mentoring

Engineering Education Scheme

Young Engineers Clubs

African-Caribbean Saturday clubs

Headstart Course for Muslim girls

Smallpeice 4-day courses

CREST investigators

London Resource Centre master classes

Setnet Primary Days

Smallpeice STEM Days

Culturally relevant & gender appropriate learning resources

Key Stage 1
Age 5 - 7

Key Stage 2
Age 7 - 11

Key Stage 3
Age 11 - 14

Key Stage 4
Age 14 - 16

16+

19+

What success looks like



New engineering
undergraduates formed.

Legacy in schools and
university departments.

Increased skill in connecting
with under-represented
groups.

The stage set for the new
14-19 Engineering Diploma.