A Shortage of New Skills

Strategic context

The need for FE colleges to connect with business and industry has never been greater than it is today. In today’s economy, developing students to be employable - if they so chose employment as opposed to higher education - is a critical part of a FE college’s remit.

It is apparent by technical skills issues discussed in government papers such 21st Century Skills: Realising our Potential 2003, Leitch Review on Skills 2006, World Class Skills 2007, Science & Society Consultation 2008, and by the NESS 2007 stating over 45,000 hard to fill vacancies in technician/skilled trade level occupations, that the FE sector still has a long way to go before the disconnect between supply and demand disappears completely.

In NEF’s report, Appliance of Science 2008 it was highlighted that part of the technician level shortage in science-based industries was down to poor articulation of what a science technician actually does. In many cases, a lack of understanding of what is involved in technical roles, for example clarity on the techniques, processes and technologies employed in a technician’s role was prevalent in lecturers as much as students.

The knowledge base in FE colleges on occupationally driven technical skills, identified in our Preparing for the Future 2008 report, was found to be narrow and repetitive. A historical legacy borne of concentrating on qualifications and supply-based motivation has resulted in dearth of courses on subjects facing serious skills shortages.

A recent desk research exercise covering sector skills agreements, industry association skills reviews, professional bodies’ skills papers and government consultation documents have illustrated the following areas that are and will continue to suffer from skills shortages: -
<table>
<thead>
<tr>
<th>Subject</th>
<th>Estimated Skill Shortage</th>
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<tbody>
<tr>
<td>Nanotechnology</td>
<td>66,500</td>
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<tr>
<td>Medical Science</td>
<td>68,000</td>
</tr>
<tr>
<td>Agricultural &amp; Land Based Services</td>
<td>12,500</td>
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<tr>
<td>Renewable Technologies</td>
<td>18,000</td>
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<tr>
<td>Nuclear</td>
<td>11,500</td>
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<tr>
<td>Transportation (train and rail maintenance)</td>
<td>12,000</td>
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<tr>
<td>Aerospace/ Aircraft Maintenance</td>
<td>12,000</td>
</tr>
<tr>
<td>Process</td>
<td>40,400</td>
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<td><strong>Total</strong></td>
<td><strong>240,900</strong></td>
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The following identifies these skills shortages in more detail:

**Nanotechnology Technician Shortages**

In the European Commission’s 2006 report the economic development of nanotechnology - An indicators based analysis it was cited that 2 million nanotech workers will be required globally, with a further 5 million technicians and technical assistants also being required by 2014.

Dr. Michael Pitkethly, Chief Executive officer of CENAMPS – Newcastle Upon Tyne, explains the problem of availability of technicians and specific expertise in UK. “In general there is difficulty in recruiting skilled technicians for engineering and high technology companies. The demise of the widespread apprentice schemes and a move to increasing university courses has meant that there is a shortage of good technicians to do hands-on work, for example machinists. More specifically, for micro and nano, the HND and HNC courses tend not to have modules that cover aspects of nanotechnology. The (Micro and Nano Technology) MNT Academy in Cardiff is trying to address this, but more needs to be done in local colleges of further education to prepare students for work in MNT enabled companies. An issue here of course is that companies do not always recognise that they are moving into MNT and tend not to examine their new needs.”

Institute of Nanotechnology in 2008 cited in their skills report that 24% of nanotech companies said their biggest problem was recruitment of nano technicians who have experience at levels 3 or 4.
BioMedical Science Technicians

The shortage around medical science technicians particular in areas such as radiology, medical imaging and dentistry are growing. The Scottish Science Advisory Committee (Dec 2008) advised, “More needs to be done to develop human resources for medical imaging, including radiologists and scientists at the level of chair/group leader, mid-level scientist, junior/trainee scientist and technician level.”

Over 68,000 more clinical/medical laboratory technicians are needed by 2012 (BLS 2008), and in respect to this shortage, the ‘Recommended UK Shortage Occupation List’ for Tier 2 of the Points Based System (PBS), laid down by UK Borders Agency, September 2008 has identified that shortage in biomedical and dental technicians are at a critical level and this shortage may only be met by migrant recruitment.

Renewable Energy Technician shortages

In the Wave, Wind and Tidal Report BWEA 2008, the recruitment demands for technical staff will rise by 275% to 18,000 by 2014 (there are currently 4800 technical staff in the WWT sector). Similar recruitment problems were identified in related technical fields such as the design and manufacture of composites, geophysics and specialist fabrication, together with less technical areas such as the management of energy crops and project installation and commissioning” (Careers in Renewable Energy, 2008)

Agricultural & Land Based Technicians shortages

In a report undertaken by LANTRA a Synopsis of the Skills Issues Facing Land-based Engineering June 2008, it was identified that “some 45% of the land-based engineering businesses surveyed across the UK reported skills shortages, with a third of employers stating that members of their workforce are not proficient at their job due to a lack of skills.

With the level of technology involved continuing to grow at a rapid pace, the remaining ageing workforce also needs to up skill; consequently the demand for highly skilled technicians is still growing.

Out of 3000 companies 68% stated in the report the skills principally required were ‘specialist technical skills’.
Nuclear Technicians Shortages

The shortage of nuclear technicians in both the energy and defence sectors has been well cited. The Ministry of Defence stated there was “a critical shortage of civilian engineers and technicians with expertise in nuclear technologies” The Independent, August 2008.

In the Cogent Skills Report 2008 it was stated that “decommissioning will be the major nuclear sub-industry growth area to 2015. The change from operations will require workforce re-skilling, and an estimated 6,000 workers will be required to undertake decommissioning specific qualifications over the next five years. The forecast requirement for new entrants to the nuclear industry by 2015 is between 3,400 and 11,500, while if early retirements occur, this could rise as high as 16,500.”

Chemical Processing (Petroleum, Oil and Gas and Polymer) Technician shortages

According the Cogent Skills Report (September 2008), the short fall of technicians in the science based and process engineering sectors by 2022 is 40,400. The report highlights a need to concentrate on developing the Technician and Operator workforce through the emergence of new qualifications and vocational training at relevant levels, as well as through up-skilling of the current workforce.

In chemicals engineering, level 3 occupations: process operators, technicians and skilled trades account for 53% of the overall workforce, and there is a 16% deficit of people qualified to level 3.

In Oil and Gas, there is an under supply (around 15%) of people qualified to level 2 and 3. Level 3 occupations such as process operators, technicians and skilled trades account for 55% of the workforce.

The Polymers industry requires innovators, technologists, designers and highly-skilled processing technicians to remain at the forefront of developments and changes in the world demand for more versatile, lightweight, low-cost and energy-saving products and applications. In the Polymers industry there is a 28% deficit of people qualified at levels 2 and 3 technician grade.”

Transportation Planning, Rail and Track Maintenance Technicians

In a report by Transport for London (October 2008), it was cited that demand for Track Technicians will increase by 102% by 2014 and similarly, Electrical and Mechanical
Technicians will increase by 119% by 2014. In a parliamentary debate on 21 October 2008, it was identified that the ‘serious shortage of skilled workers and technicians could threaten the delivery of some major rail schemes.’ Go Skills – the sector skill council for transportation

**Aerospace Technicians Shortages**

In SEMTA’s sector skills report on Aerospace Industry 2008, it was found that 31% of companies had hard to fill vacancies in Maintenance, Repair and Operating (RMO) technicians. Hard to fill vacancies for technicians included non-destructive testing (NDT) technicians and other test technicians. Other hard to fill vacancies included instructors/trainers, aircraft tradesmen and avionics engineers.

Skills gaps for technical engineering skills (75%) were the most significant, particularly for: General engineering skills, CNC machine operations, Computer Aided Design (CAD) and Computer Aided Manufacture (CAM). The increased emphasis on high value added activity within the aerospace industry has been reflected in increasing skills gaps.

The Recommended UK Shortage Occupation List’ for Tier 2 of the Points Based System (PBS), laid down by UK Borders Agency, September 2008 also identified that the shortage in aircraft component maintenance technicians and engineers is at a critical level and needs to be addressed urgently.

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