

EMERGING TECHNOLOGIES - EMERGING MARKETS

IMPLICATIONS FOR THE FURTHER EDUCATION SECTOR IN RESPONSE TO EMERGENT SKILLS NEEDS.

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Problems with staff training, new course development and student enrolment are seriously damaging the Further Education (FE) sector's ability to rise to the challenges and opportunities presented by scientific innovation. This in turn harms industry as a whole.

These are among the findings of a report "Emerging Technologies, Emerging Markets", published by the New Engineering Foundation (NEF).

Introduction

The development and application of new and emerging technologies is vital to the expansion of existing markets and indeed the opening of new market opportunities.

Ensuring that these market sectors have the skilled workforce required to exploit such technologies is vital.

The FE system has the potential to play a significant role

in supporting the commercialisation and market development of new technologies, alongside developing the intermediate and higher level skills required by industry operating in sectors that are dependent on the application of those technologies.

The NEF has explored the extent to which FE colleges are delivering courses in emerging technologies and pinpointed the factors which enable and inhibit the FE systems state of readiness and development.

The current state of play in the further education sector

A case study based approach was adopted, in order to illuminate how industry and the FE sector are working together, to meet its needs in relation to the exploitation of emerging technologies.

The picture that emerged is described below, alongside an articulation of some of the barriers to the FE sector's engagement with emerging technologies.

Review of technological developments

Horizon-scanning techniques have yet to be used extensively in the FE sector. Thus colleges do not systematically review technological or indeed sectoral developments. Such developments include the rationalisation and decline of existing sectors and the emergence of new sectors like renewables.

Market intelligence

A college's ability to horizon-scan effectively is limited by its ability to use and prioritise available market intelligence.

In addition, this market intelligence and the ability to horizon-scan is further complicated by the speed of technical advances and economic factors. These include changes in employment conditions, Gross National Product, and prices (inflation, deflation).

Design and delivery of programmes

There is a high risk associated with the design and delivery of programmes in emerging technologies, particularly as initial financial investment can be high and the current funding model requires financial return to be projected over time against expected student numbers.

Working with employers is therefore critical to ensure that there is continuity of demand in order to mitigate the risk for colleges. This is particularly the case in niche markets.

Pockets of excellence

The integration of emerging technologies into the curriculum offer of colleges has largely been by way of enhancement activities.

Consequently there are pockets of excellence across the FE sector but these tend to form only a small element of existing programmes. The exception can

be found, but only where there has been close industry involvement in the specification of the curriculum and commitment from industry to a sustainable flow of learners.

Staff expertise

Colleges do not have staff with the appropriate experience or expertise to deliver in emerging technology specialisms. Hence they lack sufficient capacity and capability to design and deliver programmes in new areas and are reliant on a handful of 'opportunistic and enthusiastic individuals' to drive cutting edge programmes.

As a result of this situation, colleges are deploying a range of approaches to strengthen their capacity and capability and are increasingly reliant on bringing in external expertise from industry or universities.

Facilities and resources

Investment in facilities and resources to support emerging technologies is expensive and can limit access to existing courses and capability to open up new curriculum provision.

Nevertheless, by working together, colleges have been able to minimise their capital investment and improve efficiencies through sharing facilities and resources, as well as staff expertise.

Conclusions

The key messages in examining what practical steps are needed to ensure a better

alignment of the FE 'offer' to skills priorities, include:

Advocacy and leadership is needed at a national level to change deep-rooted perceptions of STEM related sectors and disciplines.

Funding and funding methodologies need to be revised, particularly in respect to encouraging colleges to be more flexible, respond quicker and have the capability to horizon scan.

Strengthening the links between industry, Higher Education Institutes and the FE

sector is vital if better alignment is going to be achieved.

Response times to emerging market/technology must be improved – the 'time lag' is too great. This will require different and more flexible models of course development and delivery, as well as quality assurance.

FE colleges need to be able to access effective market intelligence, particularly at a regional level. This is a prerequisite if strategic and curriculum planning decisions are to be evidence based and the risks of investment reduced.

Recommendations

The planning, commissioning and funding of provision in the FE sector is an area of concern.

The current model inhibits long-term strategy and planning in colleges and does not readily enable colleges to be responsive to new and emergent skills needs.

The development of new technologies and the emergence of new market sectors offer a unique opportunity for the FE sector.

However, the key requirement in order to improve

the capacity for the FE system to respond quickly to the development of new markets is a streamlining of the processes involved in course approval and/or a rationalisation of the number of awarding bodies and bodies such as the SSCs, that influence the curriculum.

A full report can be found at www.neweng.org.uk/emtech

You can follow NEFs activities to support FE in STEM on Twitter at <http://twitter.com/NewEngineering>

THE PARLIAMENTARY AND SCIENTIFIC COMMITTEE VISIT TO THE DARWIN CENTRE, NATURAL HISTORY MUSEUM

WEDNESDAY 25 NOVEMBER 2009, 9.00 AM – 12.00 PM

Dr Michael Dixon personally welcomed the P&SC to the Natural History Museum's latest addition: the Darwin Centre. "We opened the Darwin Centre in September and I am delighted to say that it has been incredibly popular with our visitors. We are on course to reach 4 million visitors for the first time ever this financial year. The Darwin Centre is the most significant development that we have undertaken since the Museum moved to South Kensington in 1881. It is also a bold statement about our ambition for this organisation and a demonstration of our ability to take on and deliver large, complex projects. The Centre reveals, for the first time, the hidden scientific life of the Museum to our visitors, where they can interact with our scientists and together share the excitement of exploring, studying

and preserving the world around us. For over 125 years on this site our scientists have been generating knowledge about the natural world and using it to answer some of life's biggest questions, such as where we came from and how we can protect the future of our planet. Our ever-growing collection of over 70 million specimens represents a model of the world's diversity as it has developed over hundreds of millions of years. It is an important international research resource for those interested in the natural world. Over 350 museum scientists and 8,000 visiting researchers use these collections each year for projects such as barcoding the DNA of mosquitoes to help in the fight to eradicate malaria or helping the police solve crimes through our knowledge of forensic entomology.

Our expertise in taxonomy and systematics underpins all

life sciences and is a vital part of the nation's science capability. Yet until now all this has been going on behind the scenes and our visitors have had little idea how relevant this work is to their lives, and to our planet. The experiences provided by the Darwin Centre – and the Natural History Museum as a whole – will start to highlight the vital importance of understanding nature, our planet and its impact on all our lives, personally, locally and globally. There is currently nowhere else in the world where the public can engage with the science of nature on this scale and we hope that the Darwin Centre will change perceptions of what museums of natural history can be. The Darwin Centre is also an example of how we use public funds to leverage support from the private sector. We believe that it is essential for the economy for Government to continue to fund pure sciences,

like taxonomy and systematics for the benefit of applied sciences, and society as a whole.

We hope you enjoy your visit this morning. First, we are going to give you the opportunity to visit the Attenborough Studio, named after Sir David Attenborough, to watch a film inspired by his work. Then, you will be able to explore the interactive Climate Change Wall, located outside the Studio. Then, we are offering you tours of the Cocoon, so you can see into our collections and laboratories yourselves. Some of our scientists and visitor services staff will be on hand to answer any questions. Then finally, we have provided you with complimentary tickets to view Veolia Environment Wildlife Photographer of the Year. The Museum is open to the public from 10am, but until then you are free to enjoy and be inspired!"

