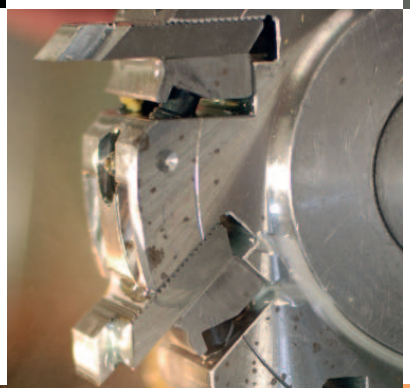
KNOWLEDGE AND TECHNOLOGY TRANSFER IN FURTHER EDUCATION



ENGINEERING

May 2008

KNOWLEDGE AND TECHNOLOGY TRANSFER IN FURTHER EDUCATION

Final Report

May 2008

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The New Engineering Foundation (NEF) was established in 2004 as a grant awarding charity that supports the development of vocational education in science, engineering and technology through providing policy advice and advocacy, undertaking and commissioning research studies and impact analyses, and developing and delivering educational programmes and resources.

As well as the work on knowledge exchange detailed in this report, recent projects include the establishment of on-line master classes in science and engineering, and programmes designed to help Higher Education fulfil the economic potential of Work-Based Learning.

The NEF also provides financial support of up to £12,000 per time for further education lecturers to take up secondments with local engineering and technology companies and improve their current knowledge of industry best-practice and cutting-edge developments.

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FOREWORD

Lord Sainsbury of Turville

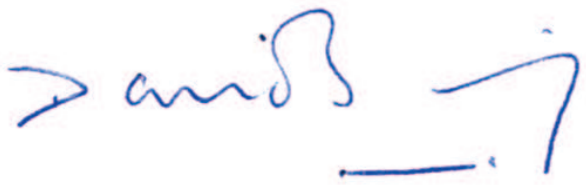
In an increasingly competitive global economy, the UK faces new opportunities and challenges. The UK's future prosperity and competitiveness is reliant on improving skills and increasing productivity by creating and applying new knowledge. This will necessitate investments in new products, processes or services and in new ways of doing business in the knowledge economy.

Maximising innovation is, as such, a crucial component in delivering the UK's ambitions for economic change and growth – a factor that we recognised in 'The Race to the Top'. The Review highlighted that in order for the UK to become a global leader in science and innovation, we needed to build on our success in knowledge transfer, which has predominantly been driven by the higher education (HE) sector to date. We also needed to extend such activities to encompass the role and contribution envisaged by the Further Education (FE) sector.

We therefore welcome the intention of Government to unlock the talent for innovation as set out in the White Paper 'Innovation Nation' published by the Department for Innovation, Universities and Skills on 13 March 2008. We particularly appreciate the emphasis that has been placed on the vital role that the FE sector can play in supporting business innovation and

developing innovative people. However, it is important that developments in this respect should be seen as part of the wider FE reform, which began with the Foster Review (2005) and was subsequently reaffirmed in the Leitch Review (2006), and not as an adjunct to them.

This report, which has developed from a study led by Professor Sa'ad Medhat FRSA, FIET, FCIM, FCMI, Chief Executive of the New Engineering Foundation, to inform what a national knowledge and technology transfer framework might look like for the FE sector, provides a timely input into the discussions that will now be taking place within DIUS and its partners across and outside of government. Moreover, this work sits alongside another study being undertaken by the Foundation on reviewing the profile of applied and vocational science at the intermediate level in the FE sector and is, therefore, a particularly valuable piece of work.



ACKNOWLEDGEMENTS

We acknowledge with gratitude the support received from the Gatsby Charitable Foundation.

We are very grateful for the invaluable contributions and feedback received from senior managers and representatives of:

- Business and industry
- Regional Development Agencies
- Government Departments and Agencies
- Higher Education Institutions
- Learning and Skills Council
- Sector Skills Councils
- National Skills Academies
- Professional networks

This work was undertaken in partnership with the Department of Innovation, Universities and Skills, and we would particularly like to thank Jonathan Mackey of DIUS for his support and commitment towards this project and Iain Nixon and David Hume from the KSA Partnership as well as Peter Ashby from 2Way Trust for their help with facilitating the Focus Group and Consultation meetings.

Finally, we would also like to thank all the members of the New Engineering Foundation Advisory Panel[1] for their continued enthusiasm and helpful contribution.

Department for **Innovation, Universities** & **Skills**

1 The New Engineering Advisory Panel consists of representatives from the following organisations: Association of Colleges; BBC; Bournemouth University; CBI; EEF; Foundation Degree Forward; Gatsby Charitable Foundation; Higher Education Academy; Institute of Directors; London Development Agency; North West Development Agency; OFSTED; Qualifications and Curriculum Authority; Royal Society of Chemistry; SEMTA.

THE CHALLENGE

Today, innovation and globalisation are fast redefining the way businesses develop and source knowledge to innovate. But how are companies, particularly small businesses, doing this in practice? Which sectors are more active in exploiting "innovation" business models? How do companies implement innovation across global value chains? What is the role of the FE sector in supporting and ultimately driving innovation? What are the implications for public policies to support innovation?

New Engineering Foundation
April 2008

Innovation is essential to the UK's future economic prosperity and quality of life. To raise productivity, foster competitive businesses, meet the challenges of globalisation and live within our environmental and demographic limits, the UK must excel at all types of innovation.

Innovation Nation White Paper
Department for Innovation,
Universities and Skills
March 2008

PROJECT AIM AND OVERVIEW

Aim

Building upon the eight recommendations from the Sainsbury Science and Innovation Review – the Race to the Top (October 2007) in respect of the role of FE in knowledge transfer – the aim of this project is develop for the first time a much-needed national KTT framework[2] that will enable more FE Colleges to play a full part in the provision of innovative KTT solutions with business and industry, thereby strengthening the colleges' educational provision and underpinning the overall economic development at local, regional and sectoral levels.

Overview

The project comprises two stages. The first stage commenced with a survey of 50 FE colleges from across all the nine economic regions in England and 80 businesses to help examine the breadth and depth of KTT activities colleges are engaged in. In addition, a process of consultation with all the key stakeholders was also undertaken. In doing so, it engaged the Department of Innovation, Universities and Skills, the LSC, RDAs, quality agencies, FE colleges, Sector Skills Councils, National Skills Academies and employers through a number of Regional Focus Group meetings that led to the formation of two high-level policy forming Think Tank and Consultation meetings in March and April 2008. The recommendations from these

2 The concept of framework does not mean imposing rigidity, rather the framework will have inherent flexibility to meet market needs whilst still having sufficient structure to ensure a well functioning FE sector that delivers its expected public benefit and acts as a source of knowledge supporting local, regional, national and international economic development and innovation. Therefore, the framework is grounded in the development of innovation policies, investment strategies, intellectual property laws and labour markets' growth plans.

consultation meetings provided a 'direct feed' into the Government White Paper, Innovation Nation published by the Department for Innovation, Universities and Skills in March 2008.

It is envisaged that the recommendations in this report will also provide further input into the way in which the Government Innovation Strategy will be implemented.

The second stage consists of the development, promotion and promulgation of twelve high profile college-based KTT demonstrator projects of £15k each in value covering the nine economic regions in England. It is intended that these demonstrator projects will help colleges to prepare and grow their capability in anticipation of the larger scale path finder projects which form the foundation for the FE Specialisation and Innovation Fund. Furthermore, it is envisaged that the outcomes of the KTT demonstrator projects will inform Government on the 'principles' for any future 'Strategic Investment' in this area.

KEY QUESTIONS

Question 1

How well 'shaped up' now are FE colleges and companies to work together on knowledge and technology transfer activities?

Question 2

In order to accelerate the development of knowledge and technology transfer activities between the FE sector and companies over the next three years…

- Where do the real opportunities lie?
- What models of operation are required?
- On what principles should any strategic investment be based?

EXPECTED OUTCOMES

- Develop joined up thinking about the role that FE colleges could play in knowledge and technology transfer activities, and explore how well shaped up now the sector is to respond.
- Explore the implications for the FE sector in expanding its role in delivering knowledge and technology transfer activities and identify critical success factors.
- Identify what policy improvements and interventions are required to enable FE colleges to play a greater role in knowledge and technology transfer activities.

EXECUTIVE SUMMARY

Introduction

The further education (FE) sector has the potential to make a significant contribution to knowledge and technology transfer (KTT) which extends beyond the commercial exploitation of cutting edge research by high technology businesses. As such it can involve colleges using established knowledge in new ways or with new users.

It is therefore timely to consider the development of a national KTT framework for the FE sector. The framework will enable more FE colleges to play a fuller part in the provision of innovative KTT solutions that meet business and community needs, and strengthen economic development at local, regional and sectoral levels.

This report, which forms part of a study being conducted by the New Engineering Foundation, seeks to explore the state of readiness of the FE sector to engage in KTT activities and sets out the actions that will help to accelerate the development of KTT between the FE sector and business over the next three years.

State of readiness of the FE colleges to respond

FE colleges and business are already engaged in KTT activity. The nature and extent of the activity varies considerably. In some colleges it is a by-product of their mainstream educational provision driven by enthusiastic individuals. As a result these pockets of activity tend to be ad hoc and very opportunistic in nature. However, in other colleges it is seen as 'mission critical' and is an increasingly significant part of the college's core activities. This more strategic

approach has yet to extend well beyond the provision of courses to meet the skills needs of the workforce; it should extend into innovative activities.

The overall assessment is that a few colleges are leading the way, a small number are 'dabbling' but a greater number of colleges are showing little activity and little awareness. Even those colleges engaged in KTT activity do not have full awareness or understanding of the true importance of this agenda and its implications for them.

At present, well-developed KTT activity has come about more by accident (idiosyncrasy) than design, heavily reliant on key (enthusiastic) individuals in the college and existing employer relationships. Reasons for this may relate to a lack of confidence in the FE sector and a lack of an FE-relevant definition of KTT, resulting in an absence of KTT cultures, mindsets and related skill sets.

Changing the culture is seen as a critical factor in generating more, and more effective, KTT activity. This also requires the resolution of some of the dilemmas in the system: businesses want a pay-off for their investments in time and colleges need an income. Colleges are geared to delivery to obtain unit funding returns and hit performance indicators and contracted outputs (e.g. qualifications), yet developing new and responsive business relationships will be a priority if KTT is to be real, not charitable.

In summary, the FE sector would seem to be relatively underdeveloped in relation to the extent to which it has shaped itself up to respond to the potential demand for KTT activity.

Conclusions and recommendations for action

Accelerating the development of KTT activities between the FE sector and business over the next three to five years will therefore require colleges to create and sustain a more enterprising culture. Bringing about the requisite culture change in the FE sector will be reliant on **strong leadership and governance** – nationally from DIUS and related departments, regionally from the Regional Development Agencies (RDAs) and Learning & Skills Council (LSC), and locally from college Principals. Colleges will also need to become more **business-facing**. Strengthening college-business connectivity will necessitate investing in more market building activity, improved approaches to customer relationship management, and embedding quality standards to drive continuous service improvement. Building the FE sector's **capacity and capability** to respond will also be an imperative.

This will require significant investment in creating the conditions for innovation to flourish in the FE sector. We would therefore make the following recommendations.

Recommendations for government departments and agencies

Recommendation 1
DIUS should develop and implement a simple framework for KTT as part of the process of embedding business-facing innovation activity in the missions of FE colleges.

Recommendation 2
DIUS working in conjunction with RDAs and other relevant agencies should target those FE colleges that have a clear strategic intent to extend the nature and scale of their activity to become 'business innovation nodes'.

Recommendation 3
DIUS reinforces a business-driven 'outcomes' based approach to the reform of the FE sector, and in particular the contribution that colleges can make in encouraging innovation in businesses.

Recommendation 4
DIUS working with RDAs should consider at the outset how the proposed FE Specialisation & Innovation Fund could be mainstreamed.

Recommendation 5
The LSC and HEFCE should redefine (or clarify) their respective roles and functions in enabling effective productive collaborations between the HE and FE on business-facing innovation activities.

Recommendation 6
DIUS, the LSC and HEFCE should evolve and grow the New Standard for employer responsiveness (the Training Quality Standard) so as to embed the ethos of KTT within it.

Recommendation 7
DIUS and the LSC should recognise and reward those FE colleges that have been identified as 'centres of excellence' in delivering business-facing innovation activities.

Recommendation 8
RDAs should prioritise larger scale and more systematic investments in FE developments regionally and sub-regionally to support KTT activity.

Recommendation 9
The LSC and Quality Improvement Agency should implement a leadership development programme in KTT for senior managers in FE colleges, as well as a development programme for operational staff.

Recommendation 10
The UK Commission for Employment & Skills should seek to encourage and incentivise businesses to take a longer-term, more strategic perspective and engage in higher value-added activity.

Recommendation 11
OFSTED should incorporate indicators for evaluating knowledge and technology transfer and related business innovation activities in FE colleges, as part of their Common Evaluation Framework, thereby encouraging a college-wide approach to become more business facing and enterprise-driven.

Recommendation 12
DIUS and RDAs should encourage the effective use of networks in developing and strengthening the capability of KTT activities with FE colleges through:

- harnessing private sector networks to leverage their skills and expertise;

- revitalising the role of existing networks such as the Knowledge Transfer Networks, which focus principally on Higher Education Institutions;

- recognising and building the role of the National Skills Academies reflecting their employers-led remit to create a compelling agenda;

The effectiveness of such networks should initially be evaluated by considering the funding of a selected number of pathfinder projects of nine-twelve month duration to identify approaches that could maximise impact and scalability.

Recommendation 13

DCSF and DIUS should use the KTT and Business Innovation agenda as the binding agenda for all the educational reforms that are currently taking place in the FE sector. Particularly, they should align the national STEM (science, technology, engineering and mathematics) agenda with the innovation and specialisation agenda, so that policies and strategic investments are brought together to seek out commonalities and implemented in a coherent manner to achieve maximum impact.

Recommendations for the FE sector

Recommendation 14

FE colleges will need to provide strong leadership by articulating how committed they are strategically to embedding KTT activity as part of their core 'offer' to business.

Recommendation 15

FE colleges will need to invest in strengthening their existing infrastructures, realigning policies and practice, and systems and processes, and building capacity and capability.

Recommendation 16

FE colleges should seek to extend their existing relationships with HE institutions and employers to support a broader range of business-facing innovation interventions.

1. INTRODUCTION

The further education (FE) sector has the potential to make a significant contribution to knowledge and technology transfer (KTT) that extends beyond the commercial exploitation of cutting edge research by high technology businesses. As such it can involve colleges using established knowledge in new ways or with new users, where the exchange of knowledge and technology takes place through interventions like consultancy, secondments, tailored training programmes, design input and access to technology or equipment rather than applied research. Moreover, opportunities for the FE sector to engage in KTT activity exist in subject areas well beyond science, technology, engineering and mathematics.

It is therefore timely to consider the development of a national KTT framework for the FE sector. The framework will enable more FE colleges to play a fuller part in the provision of innovative KTT solutions that meet business and community needs, and strengthen economic development at local, regional and sectoral levels.

The aim of this study is to inform what a national KTT framework might look like in practice. The framework will be shaped in partnership with Regional Development Agencies (RDAs) in England to bridge the gap between FE colleges' capabilities and the business needs for KTT provision. A number of FE colleges will then be supported in engaging in KTT development projects that will provide the 'proof of concept' and act as demonstrators for promoting good practice across the FE sector.

This report provides an insight into the emerging findings of the study drawing heavily on the outcomes of four regional focus groups involving representatives from FE colleges, employers, Sector Skills Councils and regional agencies, as well as a

national 'think tank' involving central and regional government officials, college executives, SSCs and industrialists (Annex 2). The report also draws on the responses received to date from a survey of 50 FE colleges (Annex 3) and 80 businesses (Annex 4).

DEFINITIONS

While it is not our intention to produce a definition of knowledge and technology transfer, it is important to recognise that KTT activity can and does involve the 'bi-directional flow' of knowledge, information and experience from the FE sector to business and from business to the FE sector. Two possible definitions follow.

Knowledge transfer in the context of economic development means:

Transferring knowledge from the Knowledge Base to business in order to stimulate innovation and generate economic and social benefits.

Knowledge transfer in an operational context means:

The transmission of new ideas, methods and technologies directly to organisations and enterprises so that they in turn can develop new products, processes and policies.

In this study we have taken a broad and inclusive interpretation of KTT which involves the sharing of an educational establishment's expertise in support of local, regional, national and international economic, social and cultural development.

2. STRATEGIC DRIVERS FOR CHANGE

In this section we briefly review the strategic context in which the KTT agenda for FE is playing out to identify the key drivers for change.

The Government's transformation agenda for FE which commenced after the publication of the Foster Review in November 2005, (which examined the role of FE), very much provides the backdrop to the emphasis that is now being placed on extending the sector's role in KTT.[3]

The Leitch Review *Prosperity for all in the global economy – world class skills* published in December 2006 and the resulting Education and Skills Bill posed a challenge to FE to become more responsive to business and the needs of the workforce.[4] KTT is therefore seen as one avenue by which to expand the FE sectors' relationships with businesses and deepen a mutual understanding of needs.

More recently, the Sainsbury Review of Science and Innovation *The Race to the Top* published in October 2007 highlighted the considerable scope available to raise the profile of knowledge and technology transfer in FE and build on the emerging good practice that exists in some colleges.[5]

3 www.dfes.gov.uk/skillsstrategy/uploads/documents/Foster%20Review%20PDF.pdf

4 www.hm-treasury.gov.uk/independent_reviews/leitch_review/review_leitch_index.cfm

5 www.hm-treasury.gov.uk/independent_reviews/sainsbury_review/sainsbury_index.cfm

The Sainsbury Review recommended:

Recommendation 4.7
The Department for Innovation, Universities and Skills (DIUS) should develop a strategy to promote and support knowledge transfer within the wider FE reform agenda. Aligned with the BSSP, it should include:

- Encouraging and supporting staff secondments to and exchanges with businesses as part of the FE workforce reform programme;
- Funding further FE knowledge transfer projects and initiatives through the Regional Development Agencies;
- Incorporating knowledge transfer capacity building in the criteria for the new Training Quality Standard for Centres of Vocational Excellence;
- Encouraging increased FE participation in Knowledge Transfer Partnerships;
- Raising business awareness of FE knowledge transfer potential through Business Links and other business support routes;
- Promoting FE's knowledge transfer role in advice from Regional Development Agencies and Regional Skills Partnerships to local employment and skills boards;
- Using existing FE networks to share best practice in knowledge transfer and business support.

Extract from the Sainsbury Review (October 2007)

In response to the recommendations as set out in the Leitch and Sainsbury Reviews, the Government has prepared implementation plans. The White Paper *Innovation Nation* published by the Department for Innovation, Universities & Skills (DIUS) in March 2008 also sets out how the FE sector can play a vital role in supporting business innovation and encouraging creativity.[6] DIUS therefore, intends to build the implementation of the Sainsbury Review into its wider strategies for FE reform and pilot a revenue-based FE Specialisation and Innovation Fund to build capacity in the FE sector.

6 www.dius.gov.uk/publications/ScienceInnovation.pdf

3. STATE OF READINESS OF THE FE COLLEGES TO RESPOND

In this section we explore how well shaped up FE colleges and companies are at present to work together on knowledge and technology transfer activities.

FE colleges and business are already engaged in KTT activity, examples of which from each of the nine RDA regions can be found in Annex 1. The nature and extent of the activity varies considerably. In some colleges it is a by-product of their mainstream educational provision driven by enthusiastic individuals. As a result these pockets of activity tend to be *ad hoc* and very opportunistic in nature.

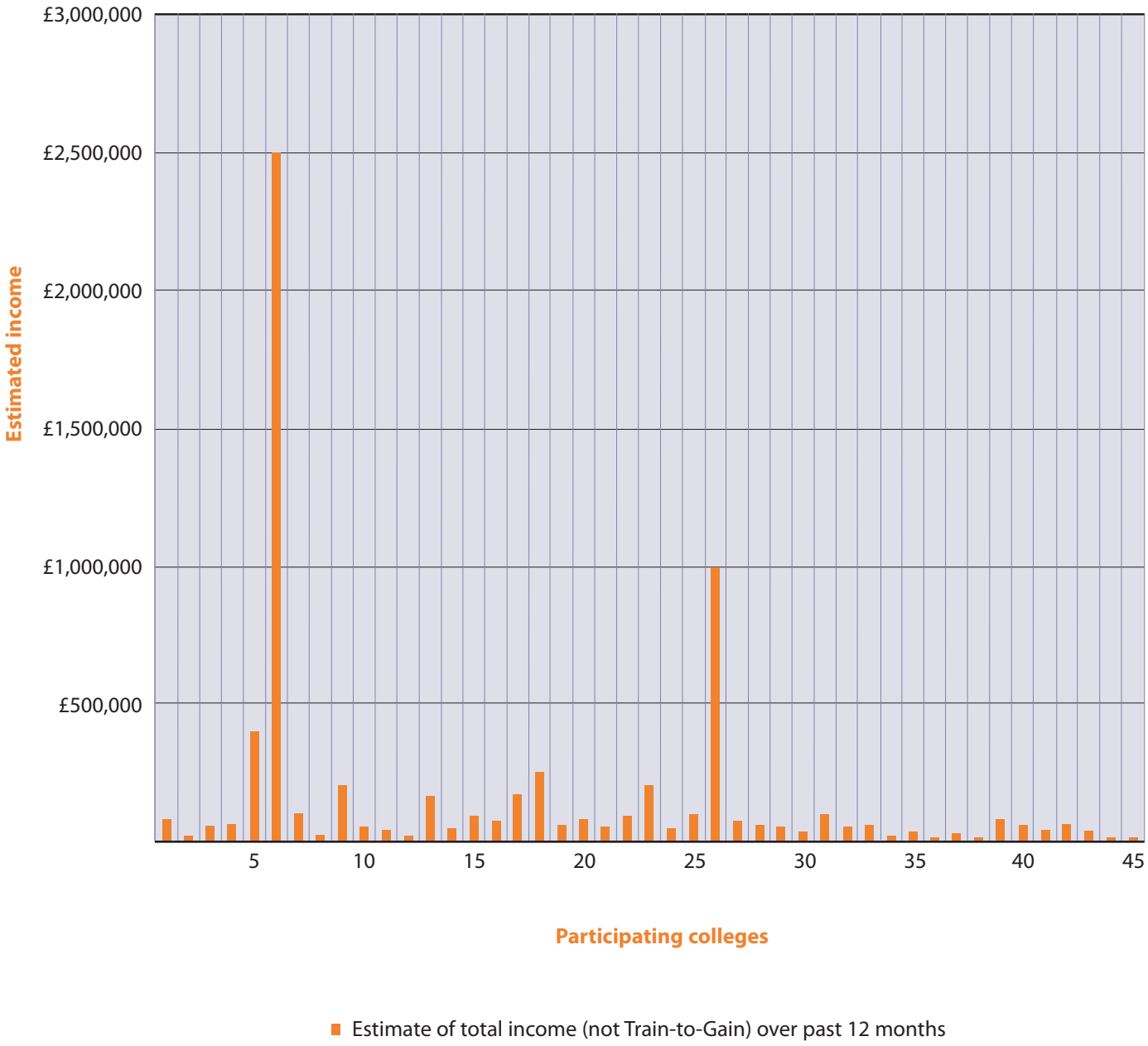
However, in other colleges it is seen as 'mission critical' and is an increasingly significant part of the college's core activities. This more strategic approach has as yet to extend well beyond the provision of courses to meet the skills needs of the workforce and should extend into innovative activities.

The chart on page 18 highlights the colleges' abilities to attract non-public funds. Forty-five colleges responded to the question of estimating their total income generated from business development activities in the last 12 months.

On average, most FE colleges are attracting less than £100,000 per annum in funds that are non-Train to Gain or linked to public sources. The two peaks represent Plymouth College (£2.5m) and Boston College (£1m).

Figure 1

Colleges' ability to attract private income through KTT and business innovation



The top three ranked sectors from which FE source their non-LSC income are:

1	Manufacturing (Aerospace, Engineering, Food etc.)	85%
2	Health and Social Care	62%
3	Construction	38%

In the London region, it is worth pointing out that the sectors of business development most cited by London colleges were Hospitality, Facilities Management and Printing. These sectors illustrate the predominant industries where London's business needs are most keenly focused. The absence of Engineering and Manufacturing indicates that very different economic profiles prevail in London to the rest of the country, and this position should be considered when developing future business innovation and knowledge transfer strategies.

In reviewing the responses regarding the information sources and networks used by colleges to create their business development plans, the following three key sources were identified:

Colleges' own market data and assessment	92%
Local Learning and Skills Councils	77%
Employer Forums	62%

The newly formed Regional Skills Partnerships (RSP) was cited by 23% of colleges as an organisation that they would work with on KTT, proving that although nascent, the influence of the RSPs are already reaching the colleges' attentions where needed.

Seventy-nine per cent of all the companies interviewed from the nine economic regions in England said they frequently have a requirement for sourcing specialist consultancy and/or training services.

However, technical and specialist consultancy activities including product and process design and improvement were found to be very sparse, and where these specialist consultancy activities existed they were usually focused in such areas as selling time to employers on specialist systems / facilities (e.g. rapid prototyping) or developing / modifying customer services processes (e.g. Business Improvement Techniques).

This narrow band of activity in which college business development activities are undertaken restricts the degree of knowledge transfer and exchange, and limits the level of innovation provided to business and industry. This situation, although providing some much-needed income generation to colleges (which they need), has been perceived by companies as an indicator of colleges' limited capability in tackling more complex business innovation projects, and hence companies have sought university engagement instead.

The following factors persuaded businesses to use FE colleges:

Close proximity	34%
Availability of relevant expertise	49%
Have existing contacts in college	13%
Other (e.g. Corporate Social Responsibility)	4%

When companies first made contact with FE colleges, they were asked whether this was because of a single point of contact (directed through external organisations such as Business Link or as promoted / advertised by the college) or randomly (using the switchboard to direct their enquiry), their response was:

Single point of contact	37%
Random	63%

Equally, different individuals from companies tended to deal with different college faculty members and lack of continuity hindered the process.

The overall assessment is that a few colleges are leading the way, another small number are 'dabbling' but there is a very large number of colleges where there is little activity and little awareness. Even internally within those colleges engaged in KTT activity, there is a mixed level of awareness and understanding about what this agenda means for them. Well-developed KTT activity has come about more by accident (idiosyncrasy) than design, heavily reliant on key (enthusiastic) individuals in the college and existing employer relationships.

Reasons for this may relate to a lack of confidence in the FE sector and a lack of an FE-relevant definition of KTT, resulting in an absence of KTT cultures, mindsets and related skill sets.

Changing the culture is seen as a critical factor in generating more, and more effective, KTT activity. This also requires a resolution of the dilemmas in the system: businesses want a pay-off for their investments in time, colleges need an income. Colleges are geared to delivery to obtain unit funding returns and hit performance indicators and contracted outputs, but developing new and responsive business relationships will be a priority if KTT is to be real, not charitable.

We will now explore different dimensions of the FE colleges' state of readiness in responding to the KTT agenda.

Leadership and governance

- Colleges are beginning to appoint individuals to their senior management teams (e.g. deputy or assistant Principals) who have the responsibility to drive forward employer engagement or business development activity, although predominantly this activity focuses on meeting skills needs of the workforce and not a broader KTT agenda.

- KTT activity in its broadest sense has not as yet been embedded in the 'fabric' of FE colleges and there is a need to re-orientate college provision to support KTT as a core activity through longer term strategies that seek to bring about internal cultural and behavioural change.

- FE colleges already engaged in KTT activity have recognised the agenda's cross-cutting nature – it can apply to all subject areas and economic sectors – yet there is still a need for many of those colleges to clarify what it means in practice to be a business-facing college, with a business-oriented and entrepreneurial leadership, and the implications of moving in this direction.

- Clarifying the 'offer' to business will help FE colleges to create the coherence required as well as to build on and extend existing activity (and business links), which have tended to be highly 'localised' and short-term in nature.

- Mitigating the risk of broadening or refocusing a college's offer to encompass KTT activity is still a central concern for senior managers. Colleges serious about this agenda have had to make substantial investments to build capacity and realign structures, processes and systems.

Market intelligence, dynamics and growth

- There is still inertia in the system which is inhibiting the extent to which FE colleges and businesses (public, private and voluntary and community sector) are engaging in KTT activity.

- FE colleges are not necessarily clear about the needs of business (except those larger enterprises or corporations) or the market opportunities that exist.

- Despite the existence of a number of sources of market intelligence, they are not necessarily well-connected (e.g. local authority economic development units often hold different qualities of data), and for effective KTT, the 'market intelligence' is best built on face-to-face dialogue, as the 'presenting need' of a business may not be what is actually required, and dialogue allows for better targeted diagnosis.

- Well established partnerships and working allegiances can provide more meaningful market intelligence. An example of this would be the Regional Advisory Group in the North East involving the National Skills Academy for Manufacturing (automotive sector), a lead College provider (Gateshead) and Nissan, the Chair, has provided up-to-date needs intelligence.

- The existence of the strategic level market intelligence (e.g. labour market information contained within Sector Skills Agreements) might, however, provide a direction of travel for the FE colleges.

- 'Language' continues to be a barrier to engagement and as a consequence, there is a need for mutual understanding of the needs of the FE sector and business.

- Existing relationships with business tend to be focused around an individual who has recognised expertise in a particular field and/or a specific project, and as such relationships tend not to be strategic apart from a few notable exceptions.

- Where colleges are engaging in KTT activity this typically involves larger enterprises – untapped opportunities exist in relation to the SME market which has traditionally been a sector that is more difficult to sustain a 'critical mass'.

- Colleges have been very opportunistic in opening up new markets for their KTT activity – more could be done to enhance a college's market building activities through the use of robust market intelligence to underpin a planned and well targeted approach (which is likely to exploit a college's areas of specialism).

- While colleges are working with and making use of intermediaries (e.g. Business Link, Train to Gain skills brokers, SSCs), they have recognised that relying on these agencies to provide sufficient volume of new business is not a viable proposition and increasing amounts of internal effort will need to be directed towards market building activities.

Capacity and capability

- Capacity and capability have been identified as one of the most limiting factors in FE colleges and businesses working together on KTT activity.

- Many colleges have invested in business-facing teams. However, the extent to which these teams are well integrated can influence the efficiency of a college's faculties: this in turn affects the responsiveness of a college in designing a solution to meet an identified business need.

- An 'account management' approach is seen as typical of the capacity and capability challenge.

- When such teams of 'specialists' in customer relations, marketing, diagnosis and contracting work well, they can bring a high level of professionalism which some operational staff (lecturers, administrators) do not have when dealing with clients, although anecdotal exceptions can be quoted.

- Expertise in training needs analysis, at an organisational, business unit, team and individual level is lacking within the college sector, and the degree to which businesses are clear about their specific needs varies.

- Attitudes – of individuals in the colleges – are also a limiting factor and are at least as important as skills in promoting both the entrepreneurial and client-focused behaviours required.

- A limited amount of research and development is conducted by FE colleges and that which is done remains very much at the margins, a factor which again is seen as limiting the potential of the sector to support KTT activity.

- Interventions to support staff development have been initiated – locally, regionally and nationally – yet more needs to be done to ensure colleges are 'customer focused' and deliver a professional and responsive service.

- The extent to which FE colleges have established partnerships with other providers to create an integrated 'package' of KTT solutions has been limited to date – potential therefore exists to build collaborative arrangements with other FE colleges, universities and indeed private sector consultancies.

Structures, systems and processes

- College structures are being realigned and 'gateways' for business have been established to improve access to FE college expertise and facilities

- Investment is also being made by many colleges to ensure relationships with a wide range of customers are better managed, e.g. CRM systems are being introduced to track interactions and collate intelligence on any business venture with a college

- Bureaucracy attributed to national and regional funding streams (e.g. Train to Gain) has been counter-productive to strong FE-business relationships and in many instances colleges have had to protect businesses from the nuisances of these different funding regimes

- Quality assurance procedures which are perceived to be 'fit for purpose' for mainstream educational provision are felt to hinder the design and delivery of responsive solutions

- Human resource policies and procedures (including working hours and reward strategies) were also identified as 'getting in the way' of encouraging college staff to adopt a more flexible approach to working in responding to business (customer) needs

- Wider structures have helped some developments – CoVE funding, Train to Gain and National Skills Academies have brought investment in structures that can be exploited further to promote KTT activity

- Branded relationships between a FE college and a business can accelerate product and service developments

- Flexibility of a college's staffing and product offer is a central requirement for delivery of bespoke solutions and services to business.

Financial

- Funding (and outputs required of that funding) continues to drive behaviour and affects the dynamics of the relationship between FE colleges and businesses. As a consequence KTT activity has to date been focused on the 'here and now' rather than creating longer-term, more sustainable FE-business relationships

- New funding streams, which mitigate a proportion of the risk for colleges, are required to build capacity in the FE sector to better respond to the KTT agenda

- The FE reform agenda has the potential to significantly impact on the nature and scale of KTT activity that is supported by FE colleges – an increasing number of colleges are likely to become 'business-facing' and their reliance on mainstream funding to support young people engaging in learning is likely to be reduced.

In summary, the FE sector would seem to be relatively underdeveloped in relation to the extent to which it has shaped itself up to respond to the potential demand for KTT activity.

Similarly, it could be argued that businesses are not, as yet, at a 'state of readiness' to engage in KTT activity supported by FE colleges. Businesses (especially micro and small enterprises) are not engaging in higher value added activity which is likely to demand new knowledge and innovation. Those that are, tend not to be aware of how FE colleges could help. Additionally, there are other inhibiting factors which will need to be worked through: intellectual property, for instance, is seen as a problem for businesses and requires new protocols on non-disclosure, etc.

4. MODELS OF OPERATION

In this section we explore the potential models of operation which could underpin an enhanced response from the FE sector to the KTT and innovation agenda.

The factors which are influencing the nature and extent to which FE colleges are engaging in the KTT agenda (as identified by the colleges themselves) include the need to increase levels of income (and from new sources); meet the New Training Quality Standard; ensure that college staff have a contemporary understanding of industrial practice; deliver on Train to Gain contracts, strengthen links to higher education as part of a joint offer to business; respond to the new 14-19 Specialised Diplomas; and secure capital investment to improve existing campuses or build new ones.

Given this situation the immediate opportunities for FE colleges to build a sustainable market for KTT activity would seem to lie in extending existing business links and exploiting new ones, particularly in respect to SMEs. Colleges are also likely to be in a strong position to establish regional and local markets that align a college's expertise with sectors of strategic importance.

Taking advantage of these opportunities may require colleges to develop and implement new models of operation and/or infrastructures (e.g. federated models which support business and solution development, wholly owned subsidiaries which operate on a commercial basis). Whilst there does not seem to be a 'one size fits all' model, the characteristics of possible models of operation that could be adopted by FE colleges include the following.

- Horizon scanning functionality to spot opportunities to extend existing markets and open up new ones.

- Regional or sub-regional provider collaborations (FE-FE, FE-HE, FE-private sector), especially strong HE-FE-employer partnerships.

- Sectoral approaches led by, for example, National Skills Academies and/or SSCs which draw on FE college expertise to meet identified needs.

- Business development functionality that supports relationship building and jointly-diagnosed and designed flexible products.

- 'Hub and spoke' processes which provide a 'gateway' to the academic expertise and make use of physical and virtual spaces.

- Integrated with intermediaries (e.g. Business Link, Train to Gain) as part of a brokerage function.

- Provides a portfolio of KTT solutions (e.g. consultancy, facilities, skills training) that draws on the expertise that of FE staff and students.

- Pump-priming and funding the 'pioneers' at a number of levels – from leaders to practitioners.

- Use of champions and champion exchanges to share practice and join up existing pockets of activity.

Delivering on the KTT agenda means that collaboration and participation in existing innovation activities is essential. So whilst the FE sector needs space to create its own brand of innovative activity, ultimately the sector needs to fit with the existing products and networks – Business Link, Knowledge Exchanges, voucher schemes, KTP etc. This has to be a clear requirement of any model of operation from the start. It will have the benefit of pushing colleges to work with a new set of partners, rather than travelling the same existing routes used for skills delivery. Therefore, the Windsor Consultation has focused on how best to use of Collaborative Approaches to build the needed capacity across the FE sector. The role of existing Networks in developing and strengthening KTT activities in FE was considered.

5. CONCLUSIONS AND RECOMMENDATIONS

In this section we set out our conclusions and recommendations for action that will accelerate the development of knowledge and technology transfer activities between the FE sector and companies over the next three years.

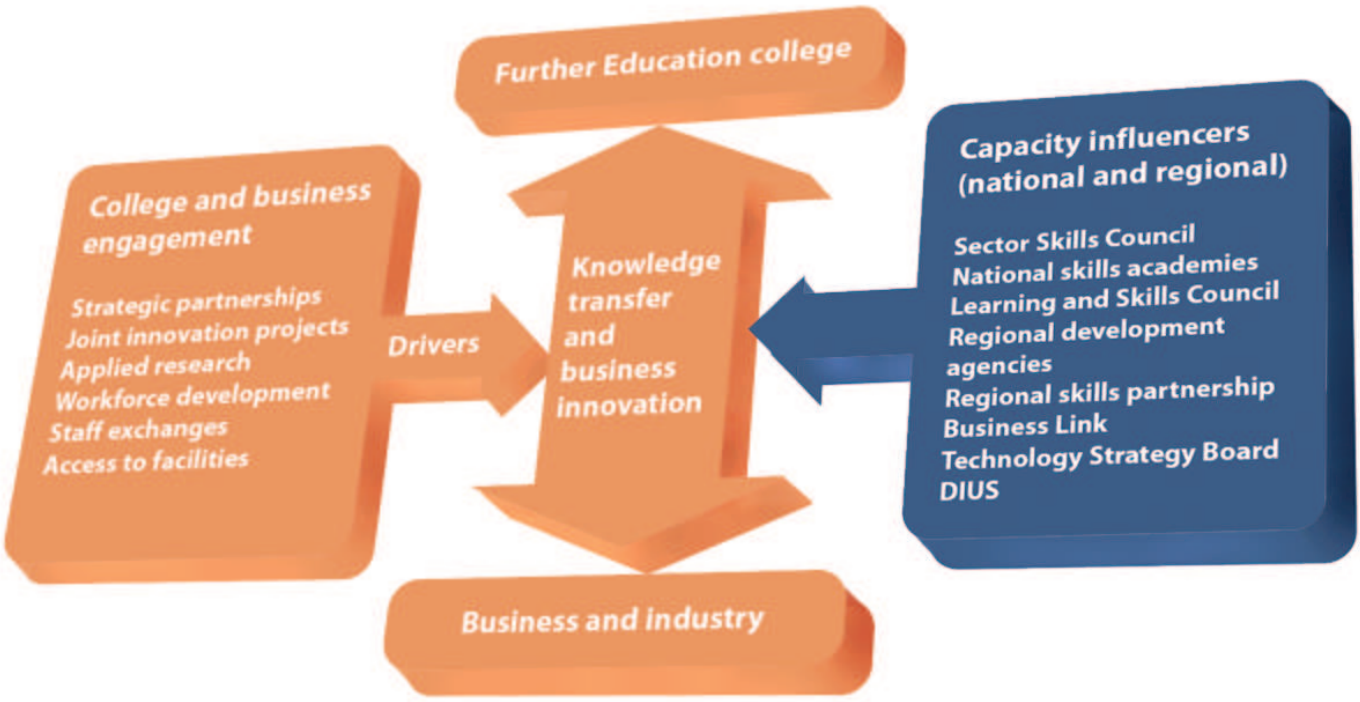
In the current economic environment, the role of FE colleges is rapidly changing and increasingly becoming market-driven. Colleges have demonstrated their potential to support the development of the workforce across all sectors and sizes of business, and at all educational levels. The primary focus however has been on delivering solutions to meet intermediate skills needs at Levels 2 and 3 of the National Qualifications Framework. However, there is considerable scope for FE colleges to extend the range of their business support activities into a broader KTT offer. And while some colleges are already doing so, the majority continue to focus on 'skills training' because of its centrality to their core mission.

Figure 2, on the following page, highlights the drivers and the capacity influencers in the development of the KTT dynamics. The rate of growth will depend upon both the level of attractiveness (i.e. cost-benefit and how compelling the engagement proposition is) of college-business engagement in KTT activities, and the level of positive or negative intervention that external agencies (local, regional and national) exert on the development of such collaborative knowledge transfer and business innovation activities.

Accelerating the development of KTT activities between the FE sector and business over the next three to five years will therefore require colleges

Figure 2

Knowledge transfer and business innovation drivers and influencers



to create and sustain a more enterprising culture. This will be a pre-condition to unlocking the sector's talent in better responding to the strategic drivers for change and moving beyond the regulatory targets which are perceived to be restricting the expansion of KTT activity in FE colleges.

Bringing about the requisite culture change in the FE sector will be reliant on **strong leadership and governance** – nationally from DIUS and related departments, regionally from the RDAs and Learning & Skills Council, and locally from college Principals. The national and regional agencies will need to create the right conditions to encourage and facilitate KTT activity. Colleges will need to clarify their intent and the extent to which KTT activity is seen as 'mission critical'. The economic viability of their existing core activity will be an influencing factor in this respect. This will help colleges to position their respective 'offers' which may lead to a greater diversification in the sector. The involvement of business leaders in the governance structure may help colleges to reposition themselves.

Colleges will also need to become more **business-facing**. The issues to address in this respect will be the differing levels of maturity in colleges' business development units, the lack of understanding and interpretation of market intelligence, dynamics and growth, and the lack of a responsive and professional culture that has

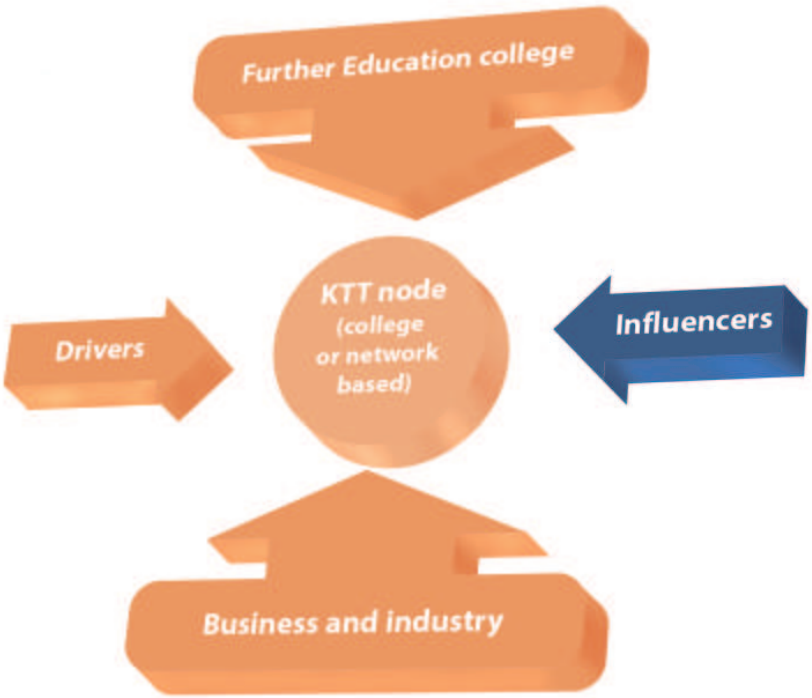
empathy with business. Strengthening college-business connectivity will necessitate investing in more market building activity, improved approaches to customer relationship management and embedding quality standards to drive continuous service improvement. The infrastructure in place to support Train to Gain related activity may provide the foundations for a business-facing college.

A Business Innovation mechanism in the form of a "node" should be considered by individual colleges, or a network of colleges and strategic partners, to enable a more visible and structured interface of inter and intra communication, as shown in Figure 3. Such a node structure will strengthen the flow of information and dissemination externally to employers, business partners and agencies, as well as informing college staff about business opportunities and progress, and collating information about college capabilities.

Building the FE sector's **capacity and capability** to respond will be one imperative. Organic growth in the sector is an option, but it will take many years to bring about a significant step change in KTT activity. Strategic investment is therefore essential to move this agenda forward more quickly and to mitigate some of the risks to colleges. They themselves will need to realign human resource policies and practices, and enhance systems, processes and procedures (e.g. quality assurance mechanisms). This may require differentiated internal structures and systems to better handle the different service streams.

Figure 3

Business innovation nodes



Recommendations

Given our analysis of the current state of readiness of FE colleges and businesses to work together on knowledge and technology transfer activities, we embrace the Government's intentions to invest in creating the conditions for innovation to flourish. In particular, we would see the piloting of a revenue-based FE Specialisation & Innovation Fund to build the capacity of the FE sector to support businesses to raise their innovation potential as a critical next step.

In deploying the funding to unlock the talent of the FE workforce to drive business innovation through partnership and knowledge exchange, we would recommend the following.

Recommendation 1

DIUS should develop and implement a simple framework for KTT as part of the process of embedding business-facing innovation activity in the missions of FE colleges. The framework will need to encapsulate what discernible KTT activity looks like for the FE sector; what the indicators of success are for FE colleges and businesses engaged in such activity; and exemplify the opportunities to play a part in KTT activity through case studies of practice (which extend beyond the provision of workforce training).

Recommendation 2

DIUS working in conjunction with RDAs and other relevant agencies should target those FE colleges that have a clear strategic intent to extend the nature and scale of their activity to become 'business innovation nodes' (which can act as 'cultural architects' for the rest of the sector), and have either a demonstrable track record or the potential to deliver.

Recommendation 3

DIUS should reinforce a business-driven 'outcomes' based approach to the reform of the FE sector, and emphasise the contribution colleges can make in driving up innovation in businesses, rather than an 'outputs' (e.g. qualifications) driven approach.

Recommendation 4

DIUS working with RDAs should consider at the outset how the FE Specialisation & Innovation Fund could be mainstreamed to provide a sustainable 'performance earned' funding stream, subject to performance of the FE pathfinder projects, rather than a formulaic funding stream for some (but not all) colleges.

Recommendation 5

The LSC and HEFCE should redefine (or clarify) their respective roles and functions in enabling effective productive collaborations between the HE and FE on business-facing innovation activities which build on the platform created through Foundation degrees and other related activity.

Recommendation 6

DIUS, the LSC and HEFCE should grow the New Training Quality Standard so as to embed the ethos of KTT within it and broaden its application from an organisational to individual level by drawing on standards or competency frameworks developed for HE (e.g. AURIL CPD framework).

Recommendation 7

DIUS and the LSC should recognise and reward those FE colleges that have been identified as 'centres of excellence' in delivering business-facing innovation activities by adopting an approach similar to the Centre of Vocational Excellence scheme in FE or the Centres of Knowledge Exchange and/or Centres for Teaching & Learning in HE.

Recommendation 8

RDAs should prioritise larger scale and more systematic investments in FE developments regionally and sub-regionally to support KTT activity.

Recommendation 9

The LSC and Quality Improvement Agency (and the body that succeeds it) should implement a leadership development programme in KTT for senior managers in FE colleges, as well as development programme for operational staff, to build capacity and capability in the sector. Such initiatives could build on the well established Train to Gain development programme.

Recommendation 10

The UK Commission for Employment & Skills working through Business Link and Train to Gain, the reformed Sector Skills Councils and other employer representative organisations (e.g. CBI, EEF) should seek to encourage and incentivise businesses to take a longer-term, more strategic perspective and engage in higher value added activity.

In doing so, we believe this will engender (through a 'pull' rather than 'push' strategy) greater differentiation and diversity in the FE sector, where colleges need to find their place and set out a clear proposition to business. Such macro-level interventions may also support moves towards greater self-regulation and responsiveness in the system. Hence, we would recommend that:

Recommendation 11

OFSTED should incorporate indicators for evaluating knowledge and technology transfer and related business innovation activities in FE colleges, as part of their Common Evaluation Framework, thereby encouraging a college-wide approach to become more business facing and enterprise-driven

Recommendation 12

DIUS and RDAs should encourage the effective use of networks in developing and strengthening the capability of KTT activities with FE colleges through:

- harnessing private sector networks to leverage their skills and expertise

- revitalising the role of existing networks such as the Knowledge Transfer Networks, which focus principally on higher education institutions.

- recognising and building the role of the National Skills Academies reflecting their employers-led remit to create a compelling agenda.

The effectiveness of such networks should initially be evaluated by considering the funding of a selected number of pathfinder projects of nine-twelve month duration to identify approaches that could maximise impact and scalability.

Recommendation 13

DCSF and DIUS should use the KTT and Business Innovation agenda as the binding agenda for all the educational reforms that are currently taking place in the FE sector. Particularly, they should align the national STEM (science, technology, engineering and mathematics) agenda with the innovation and specialisation agenda, so that policies and strategic investments are brought together to seek out commonalities and implemented in a coherent manner to achieve maximum impact.

Recommendation 14

FE colleges will need to provide strong leadership by articulating how committed they are strategically to embedding KTT activity as part of their core 'offer' to business and outlining what this will mean in practice.

Recommendation 15

FE colleges will need to invest in strengthening their existing infrastructures, realigning policies and practice, and systems and processes, and building capacity and capability to better support their intentions in relation to business-facing innovation activity.

Recommendation 16

FE colleges should seek to extend their existing relationships with HE institutions and employers by building the platform created through Foundation degrees and related activities to support a broader range of business-facing innovation interventions.

ANNEX 1 - Case studies of KTT practice

North East: Gateshead College and Nissan

In 2005, Gateshead College opened a £60m training facility in partnership with Nissan, where more than 100 of the company's apprentice trainees attend the college each year. The centre houses a mock-up production line where students learn how Nissan put together their cars without the pressure of doing work on a real-life plant line. The college worked closely with Nissan to design the programme, to the point where all students at the centre wear Nissan uniforms and actual quality checks are posted on the walls.

The collaboration has been extended to include the University of Sunderland to develop a Foundation degree to target the production team leaders. The new degree includes modules on Lean Principles, Leadership of Change, Tools and Techniques for process and quality and project management.

A major and unexpected outcome of the project was that Nissan made the decision to site their training department and its equipment at Gateshead College's Automotive and Manufacturing Centre of Excellence.

East of England: Castle College and Toyota

Toyota is the second largest manufacturer of automobiles and the seventh largest company in the world with production facilities in 26 countries. The first Toyota model ever to be built in Europe was the Toyota Carina E when car production began at Burnaston, Derbyshire in England's East Midlands in 1992.

Now, with the creation of Toyota GB's state-of-the-art Academy, nearby Nottingham could soon gain the recognition it deserves as a hub for the vehicle training industry.

In a major partnership with Nottingham's Castle College, Toyota GB has taken the decision to further increase its already significant presence in the region with a £14m centre of excellence planned for the Highfields Science Park. The Automotive Training Academy will accommodate the firm's 350 apprentices from centres around the country and offer a range of opportunities for up to 600 local students.

This new Toyota Academy will help to fill a sector skills gap that was identified by Toyota and its project partners – the East Midlands Development Agency (EMDA) the Learning & Skills Council, Castle College Nottingham, Nottingham City Council, Nottingham Regeneration Ltd and Greater Nottingham Partnership, all of whom recognised the importance of the scheme in helping to further develop the region's manufacturing and engineering sector skill-base.

The academy forms part of Toyota's international Training & Education Partnership (T-TEP) scheme and is the latest in a sequence of investment by Toyota GB in the area. Since 2002, Toyota GB has run the successful Toyota and Lexus academies on Nottingham Trent University's Clifton site, and its apprentices currently carry out their training to the south of the city with specialist firm Carter and Carter, a relationship that will continue.

The Academy has two focal points: the Toyota National Apprenticeship Centre, and the Castle College T-TEP. The development will house nine separate workshops, an assessment centre and training rooms in Nottingham. Toyota GB will supply all the vehicles, parts, equipment and expertise.

North West: Blackburn College and Triax UK

A commercial partnership with Blackburn College is helping keep students and local workers at the cutting edge of the digital revolution.

College Team Pioneers New Digital TV Course

As the UK switches from analogue to digital TV formats, local company Triax UK Ltd have teamed up with the College as a sponsor of its new City and Guilds Signal Reception NVQ course, which is already proving hugely popular.

The course came about after the College was approached to take part in the Department of Trade and Industry's pilot scheme as part of the Government's Digital Switchover Project.

Richard Gagan, Sales Manager for Triax UK Ltd, said: "As a leading manufacturer of TV and Satellite distribution equipment, Triax is committed to helping the industry in the transition period from analogue to digital TV reception by working alongside academic organisations such as Blackburn College. We are delighted to be sponsoring this course and helping to bring about the new skills and knowledge required within this new industry technology."

The first registrations for the College course will take place on May 11 and May 12th and several local

businesses have already expressed an interest including Pennine Aerials, Air Aerials Ltd and Handley Aerials Ltd.

The pilot learning project has been welcomed by the College and the resources package donated by Triax will enable the College to offer high quality assessment and training for the news Signal Reception NVQ. Further sponsorship for the course has come from Cables Britain and this qualification will soon be a requirement for any installers wanting to display the government's "digital tick" logo.

Course tutor Mark Summerfield said:" It is refreshing to find a company so committed to raising standards within the industry and so willing to support the education of practitioners in the field. We are delighted to be working alongside Triax in this unique partnership".

London: Newham College

Newham College, under the NEF/LDA supported Knowledge Transfer Capability in Further Education scheme used its expertise in RFID, nanotechnology and eco-friendly fashion, to build business benefits for SMEs and organisations in the region.

Newham College launched their RFID Lab and training facility with industry sponsors such as Cisco Systems, Integral RFID and RedPrairie last year, to provide potential RFID end users an interactive environment in which they can learn about the technology.

Newham have developed a professional partnership with RFID4U training organisation. RFID4U deliver training which is authorized by the Computer Technology Industry Association. The training includes the CompTIA RFID+ test, which is a vendor-neutral professional certification that validates a professional's knowledge and skills in the areas of installation, maintenance, repair and upkeep of RFID systems.

The development of the RFID Discovery lab included a range of RFID hardware and solutions and smart shelves with embedded reader antennas for inventory applications. This unique RFID facility has enabled Newham to expand their radio frequency work to embrace nanotechnology. In undertaking such expansion, they have been able to work on knowledge transfer projects with organisations such as West Ham United Football Club and London City Airport.

In the case of West Ham United, they are a premier football club that hosts a wide range of businesses including a Quality Hotel and function facilities, a mega store and football in the community. Newham's knowledge transfer project included the exploration of new applications linking RFID and nanotechnology for use in ticketing, hotel bookings, maintenance and the tagging of assets. The nanotech included the fusing of intelligent RFID into materials (fabrics, papers etc) to enable quick location of the object/asset.

With the increased focus on East London and the Thames Gateway as a result of the 2012 London Olympic games, the London City Airport is at the heart of regeneration, with the aim of being the key generator to the local area with a master plan taking them up to 2030. Taking cognisance of this growth strategy, London City Airport wanted to explore the use of improving operational efficiency and increased security through RFID technology. Newham College again focused on bringing together the cutting edge technologies of nano and RFID to explore ways in which airport security through intelligent tagging, could potentially be improved. The experts in the college also examined ways in which nano and RFID could be used to improve operational functions, hospitality and maintenance.

Through the knowledge transfer activities undertaken by Newham, both West Ham United and London City Airport management are looking to the College to help them embed this knowledge and grow their RFID and nano development strategies further.

Newham College has developed an expertise in sustainable and eco-friendly fashion, and they have used this expertise to develop a working partnership with the London College of Fashion to help to drive 'Ethic' – the project created to support SMEs from the creative sector to develop and grow markets for eco-friendly products such as textiles and jewellery - as well as, building momentum and participation in the Eco Design Network to create greater awareness and sector interest in sustainable fashion.

East of England: Writtle College

Writtle College is in a slightly unusual position in that it focuses on land-based industries (e.g. farming, animal welfare), and although the college teaches several higher education programmes, there is a lot that can be gleaned from their KTT activities which is of use to the FE sector. However, this has not stopped them from taking up several innovative approaches to expanding their business to assisting industry as well as training their students.

To drive this work, the college carries out research in several fields including crop development, equine and animal science and post-harvest technology.

The College has established four Centres of Innovation as part of a college-wide "In search of Excellence" programme. This programme laid the basis for the re-profiling and the re-positioning of the College within the context of a changing rural environment. The centres have been positioned in areas of strategic importance for the College and the industries it serves and are dynamic groupings that drive and inspire innovation and creativity and encourage entrepreneurship in the land-based sector. They will have a major role in nurturing a range of external activities and collaborations to support knowledge transfer- and practitioner-based/action management based reach-out activities. The Centres will promote the "greening" of the campus and support the future aspiration of the College to develop into a major 'university' provider within the borough and the region. At the end of the process, in some 20 years time, the College could be positioned as a unique technical university delivering a programme of activities that enable the countryside to remain viable, vital and vibrant.

The college is also one of the collaborators in the i10 project, which is an online hub providing businesses with easy access to the expertise and facilities within universities and higher education institutions in the East of England. The Knowledge Transfer Partnership scheme allows associates to work with the college and a company, to facilitate knowledge transfer, access to expertise, step change and business enhancement in order to boost the company's productivity, with government funding to assist the programme.

South West: City College Plymouth

Last year, the European Union introduced a directive which forbids all electronic devices in the European Economic Area to emit unwanted electromagnetic interference or pollution or be susceptible to interference themselves.

Obviously this has an impact on all businesses producing electronic components, and as there are stiff penalties for non-compliance (£5k fine), there is a strong desire to ensure that companies are ready for the implementation of the directive.

To help local business, City College Plymouth is planning two courses to assist local industry in achieving compliance at minimum cost.

The first of these is a four-day course, run on one day a week for four weeks, aimed at designers and senior technical staff working for both equipment manufacturers and system integrators. The course explores in depth the regulations and legal requirements, the theories of EMC, criteria covered by the regulations, design and installation principles, and testing and documentation.

They have also provided a one day course for installation staff covering the basic EMC theories and regulations, but concentrating on how good and bad practices can affect the overall EMC performance.

South East: Carshalton College and Argos

Carshalton College recently needed to update the industrial experience of their business staff as a result of an Ofsted inspection. They set out to better understand the needs of a local employer and feed this back into the planning and development of business courses. They then designed a project that would look at key skills required, qualities and future needs of the organisation with particular emphasis on the local needs of the area, taking into account their employee profile. It was planned to carry out an analysis of the local training needs and highlight possible areas of weaknesses not covered by their general training and induction procedures.

Retailing is a major employer in the UK and because of the high potential of work experience placements, the college sought a partnership with Argos, enabled by a fortuitous contact inside the HR department at Argos. The project resulted in various meetings and interviews with staff members and experience working as shop staff for three days. This allowed the college to get an inside view of the Argos operation and also to learn about some of the qualities that the company looks for and expects from its employees.

Perhaps one of the most interesting aspects of this was that the college members were able to appreciate that it's the softer skills such as teamwork and communication which need to be fostered to build confidence, enthusiasm and friendliness with customers. The nurturing of these qualities was believed to be just as important as the more practical retail and business lectures.

Argos were able to get an independent review of their staff recruitment process and in-house training in a report written by the college. The whole experience gave them a good insight into the way FE Colleges think which in turn provides a good understanding of the training needs of new recruits fresh from college.

The college can now tailor their courses more effectively and they potentially have a contact for work experience for

their students with a big local employer. The staff were also delighted with the experience and they all believe such placements should be a part of their annual continuing professional development.

West Midlands: City of Wolverhampton College and Turner Powertrain

The City of Wolverhampton College has an active employer engagement department. They work with companies both in the local area and further afield to assist them with recruitment, Train to Gain, apprenticeships, statutory needs and bespoke solutions, as well as working with companies on knowledge transfer projects.

One example of KTT is the college's work with Turner Powertrain Systems (who make gearboxes for the Caterpillar Group) to develop a Lean Manufacturing Academy. The idea was to provide a centre for local companies to use which would promote good practice in lean manufacturing and business improvement techniques.

The Academy, built at Turner Powertrain's premises in Wolverhampton and launched in March 2006, provides a contextualised environment in which employers and their staff can both implement and gain an understanding of lean manufacturing techniques. While it was originally envisaged that the Lean Academy would be primarily aimed at the Engineering Manufacturing industry, the concept has successfully been adapted and applied to other sectors, including construction.

Turner Powertrain has found that its partnership with the College's Lean Academy forms an integral part of their capability-building strategy, enabling them to achieve its continuous improvement and growth objectives. The company is delighted to be able to work in partnership and share the "Lean Journey" with the College and other industries and sectors.

Yorkshire: Doncaster College and Grant Rail

Knowledge and technology transfer is in its infancy at Doncaster College. However, the college is involved in a project with Grant Rail. A fundamental problem with the sector is that there is no qualifications structure in the rail industry as a result of the lack of occupational standards. The result is a very fluid labour market with maintenance and the relevant training being entirely reactive to the situation at hand.

A lot of the workers in the industry are facing basic skills deficiencies. There are no modern apprenticeships available because of the lack of interest in such courses (unsociable hours being the main reason). This leads to only very low-skilled workers being recruited by employers. There is no staff development from companies either as there is an absence of company loyalty.

Grant Rail is therefore starting up a Railway Engineering College which they hope to become a Centre of Excellence. Yorkshire Forward is offering facilitating funds to help set-up the site which will have facilities for training people on all aspects of rail maintenance, from overhead electric power lines to track welding to signalling.

The welding aspect is one area of actual technical transfer between the college and industry. Grant Rail is very familiar with one type of welding (alumiothermic), whereas the college is proficient in other types (MIG and oxy-acetylene). The idea is to update each other's knowledge by sharing practice and thus collectively gaining expertise.

The college is also helping to set up a Modern Apprenticeship course at Transco's training facility in Sherwood Forest, Nottinghamshire. There is currently a lecturer working with Transco learning about all the latest equipment they use before the course starts.

In general, the college is hoping to do more to deliver more courses in the workplace along the lines of the Grant Rail and Transco models.

ANNEX 2 - Participating organisations, focus groups, think tanks and consultation meetings

Cambridge Focus Group (19 Feb 2008)

Bedford College	Dave Pridmore
Cambridge Regional College	Greg Hanrahan
EEDA	Carole Edwards
EEF	Barry Herd
Gatsby Charitable Foundation	Dr John Williams
Great Yarmouth College	Bill Witham
Huntingdonshire College	Ann Constantine
Learning and Skills Council	Dr Jon Nay
Marshall Aerospace	Roger Tingey
Moy Park	Barry Dixon
New Engineering Foundation	Prof Sa'ad Medhat
Peterborough Regional College	Kevin Taylor
SEMTA	John Harris
SR Technics	Vince Skinner
The KSA Partnership	Iain Nixon
University of Bedfordshire	Prof Andrew Slade

Bristol Focus Group (22 Feb 2008)

Bridgwater College	Bob Mudd
Bristol City College	Keith Elliot
British Energy	John Elkins
Exeter College	Rob Bosworth
Flybe	Chris Whittle
LSC	Dr John Chudley
Magnox South	Brendan Daly
New Engineering Foundation	Prof Sa'ad Medhat
SWRDA	Jill Sheen
The KSA Partnership	Iain Nixon
University of the West of England	David Lennard

Leeds Focus Group (26 Feb 2008)

Association of Colleges	Caroline Rowley
DIUS	Jonathan Mackey
Gateshead College	Mick Brophy
Huddersfield College	Steve Scarre
Hull College	Kyran Parker
Leeds College	Nav Chohan
Leeds Metropolitan University	John Blake
National Skills Academy for Manufacturing	Edward Leng
New Engineering Foundation	Prof Sa'ad Medhat
Reliance Precision Ltd	Mick Hallam
Rotherham College of Arts and Technology	Chris Stanbra
The KSA Partnership	David Hume
The Product Workshop	Graham Broughton
Unilever	Steve Fletcher
Yorkshire Forward	Alison Fender
Yorkshire Forward	Tony Jowitt

London Focus Group (28 Feb 2008)

Angle PLC	Martin Cooke
Cineris	Ashley McClinton
DIUS	Korin Wilshaw
Kensington and Chelsea College	Dr Amanda Hayes
Knowledge East	Martin Davies
LDA	Maja Maricevic
Lewisham College	Tim Potter
LSC	Jim Lewis
Mount Tai Foods Ltd	Geeta Cohli
New Engineering Foundation	Prof Sa'ad Medhat
NEF / HE Academy	Malcolm Carr-West
Table Top Cooking Company / Isis Business	Sean Satterly
Tower Hamlets College	Asif Siddiqui
Vega Associates	Colette Taylor
Waltham Forest College	Tracey Edghill

Institute of Directors Think Tank (4 March)

157 Group	Lee Probert
2WayTrust	Peter Ashby
Centre for Enterprise	Duncan Brown
Coventry University	Dr Darryl Bibby
Creative and Cultural Skills	Victoria Pirie
Department for Business Enterprise and Regulatory Reform	Shirley Rolfe
Design Council	Lesley Morris
DIUS	Jonathan Mackey
DIUS	Korin Wilshaw
Gateshead College	Mick Brophy
Huntingdonshire Regional College	Anne Constantine
Improve Ltd	Jack Matthews
London Development Agency	Maja Maricevic

LSC	Richard Marsh
LSC	Laurence Leader
National Skills Academy for Manufacturing	Bob Gibbon
National Skills Academy for Nuclear	Jean Llewellyn
New Engineering Foundation	Prof Sa'ad Medhat
Northwest Development Agency	Dr Lis Smith
Quality Improvement Agency	Liz Aitken
Reaseheath College	Meredydd David
Technology Strategy Board	Pete Munday
University of Chester	Charlie Woodcock
Warwickshire College	Mary Heslop

Consultation at St. George's House, Windsor Castle, 8th to 9th April 2008

Unlocking Talent in the "Innovation Nation": Making a success of the pathfinder projects in the Further Education system

The Windsor Consultation has focused on addressing six questions.

1 What sorts of networking arrangements have the greatest potential to simplify and align the various support mechanisms in play as a means of encouraging strategic partnerships in knowledge and technology transfer?

2 What sorts of pathfinder networking arrangements have the greatest potential to make sense of the FE funding landscape and optimise the opportunities for KTT?

3 What sorts of pathfinder networking arrangements have the greatest potential to help us better understand how these successful colleges have developed their entrepreneurial drive and capacity to innovate, and the degree to which local market conditions contextualise their business services?

4 What sorts of pathfinder networking arrangements have the greatest potential to help us better understand the natural tension between collaboration and competition in the KTT market?

5 What sorts of pathfinder dissemination models have the greatest potential to demonstrate powerful new ways to replicate best practice? What characteristics should these models have?

6 What sorts of pathfinder networking arrangements have the greatest potential to address these 5 issues and accelerate capacity building in the skills, behaviours and business processes needed for successful knowledge and technology transfer? What should our investment strategy be?

The List of Participants included:

National Skills Academy for Manufacturing (Managing Director)	Bob Gibbon
Foundation Degree Forward (Director of Employer Partnerships)	Charles Pickford
Chester University (Associate Dean of Lifelong Learning)	Charlie Woodcock
Coventry University (Dean, School of Lifelong Learning)	Darryl Bibby
National Skills Academy Nuclear (Chief Executive)	Jean Llewellyn
Learning and Skills Council (Area Director, South-West)	John Chudley
DIUS (Assistant Director, Skills Specialisation)	Jonathan Mackey
Skillset (Executive Director)	Kate O'Connor
Design Council (Head of Design Skills)	Lesley Morris
North-West Development Agency (Director of Skills Policy)	Lis Smith (Dr.)
Quality Improvement Agency (Programme Director)	Liz Aitken
London Development Agency (Senior Development Manager)	Maja Maricevic
Manchester Training (Managing Director)	Mark Currie
Warwickshire College (Vice Principal, Strategy)	Mary Heslop

Reaseheath College (Principal)	Meredydd David
Gateshead College (Assistant Principal)	Mick Brophy
New Engineering Foundation (Chief Executive)	Sa'ad Medhat (Professor)
DIUS (Ministerial Delivery Unit)	Shehana Patel
Department for Business Enterprise and Regulatory Reform (Assistant Director, Skills Unit)	Shirley Rolfe
2WayTrust (facilitator)	Pete Ashby

ANNEX 3 - Participating colleges in the survey

North East

Barnsley College
Bradford College
Calderdale College
Darlington College of Technology
East Riding College
The Grimsby Institute of Further & Higher Education
Park Lane College - previously Keighley College
Leeds College of Technology
Newcastle College
Rotherham College of Arts and Technology
Sheffield College

North West

Bolton Community College
Burnley College
Carlisle College
Kendal College
Liverpool Community College
Macclesfield College
Nelson & Colne College
Oldham College
Preston College
St Helens College
Tameside College of Technology
Wigan & Leigh College
Wirral Metropolitan College
Blackburn College

East Midlands

Boston College
Castle College
Cambridge Regional College
Great Yarmouth College
Huntingdonshire College of Technology
New College Nottingham
Northampton College
Peterborough Regional College
Stafford College

South West

Bath College
Cornwall College
Bridgewater College
City of Bristol College
Exeter College
Plymouth College of Further Education
Somerset College of Arts and Technology
Wiltshire College
Yeovil College

South East

Alton College
Barking College
Barnet College
Basingstoke College of Technology
Bromley College of FE and HE
Bexley College
Brooklands College of Technology
Carshalton College
Chichester College of Arts Science and Technology
City College, Brighton and Hove
City of Westminster College
Central Sussex College
Croydon College
Eastleigh College
Newham College of FE
Merton College
South Kent College

West Midlands

Bournville College of Further Education
City College, Coventry
Herefordshire College of Technology
Sandwell College
Solihull College of Technology
Shrewsbury College of Arts and Technology
City of Wolverhampton College
Dudley College

ANNEX 4 - Participating employers

The following companies who have provided feedback to this project have also participated in the Enterprise and Knowledge Transfer Scheme which the New Engineering Foundation is piloting with London FE Colleges in partnership with the London Development Agency.

Argos
Ashridge Management Centre
Barts & London NHS Trust
Beauty Essence
Chartered Management Institute
Colour Holographics
Dot Net Solutions
Future First Technologies
Gallions Housing Association
Greenwich Council Childcare Services
Knowledge Dock at University of East London
LA 1 Hairdressing Salon
LOCOG - ProActive South London
Morph/Greenwich Council
Oxleas PCT
RBKC – Libraries and Arts and Regeneration
RBKC Chamber of Commerce
Redbridge Sports Centre Trust
RETRA
Sash Window Workshop
South Bank University
Stuarts Yachts
The Place, London Contemporary Dance School
Top To Toe Salon
Whittington Hospital

We are also grateful to the following organisations that provided input and guidance to this project:

ABB Robotics
Airbus
Aquafab
Ashcroft Construction Ltd
Bakkavor Bourne Salads
Bonus Aviation
Bosch Training
Brookhouse Holdings Ltd
Business Systems Services UK
Cabair College of Air Training
Chevron
Cinetic Landis Grinding Ltd
CRDM Ltd
Dairy Crest Ltd
Dyer Engineering
Emirates Airlines
Feedback Instruments
Finnforest
Imerys Minerals Ltd
Inchcape Automotive Ltd
International Nuclear Solutions
JCB
Johnson Controls Automotive Ltd
Kingston University
Liberty PLC
Lincoln Electric
Man ERF Ltd
Monarch Airlines
Movevirgo
Moy Park
My Travel Aircraft Engineering
Newcastle Aviation Academy
NMUK Ltd
Orbit Research
Paktronic
Pathtrace Engineering Systems
PDC (CNC) Engineering Ltd
Pelican Controls
Pennine Housing 2000
Sapphire
Sharp UK
Siemens
Smith & Byford Ltd
SSL International
Swansea University
T Benson (Electrical)
Toyota
Unilever
Universal Rubber Company
University of Greenwich
University of Portsmouth
University of Sunderland
University of Westminster
UPM Shotton Paper
Yor-Power Generators

ANNEX 5 - Knowledge transfer project profiles supported by the New Engineering Foundation (examples)

Bexley College
Beverley Husbands
Gallions Housing Association

Provide counselling expertise, review current provision and match against best practice and provide a report on strengths and weaknesses with suggestions for improvement.

Carshalton College
Jo Hutton
Argos

Analayse local training needs, highlighting areas of weaknesses not covered by corporate training and induction and produce report with resource plan.

Cornwall College
Anthony Bowden
Movevirgo Ltd

Research how UV curing can be used to create new sustainable materials (resins) for coating a wide range of surf boards

East Riding College
Michael Farline
Suzuki/Yamaha Marine Engines

Investigate modern marine technologies and techniques that support the development of innovative marine engineered transmission.

East Riding College
Ray Holland
Yor-power Generators

Develop better employer engagement links and undertake Training Needs Analysis in order to develop specialised courses for company.

Gateshead College
Peter Coleman
NMUK Ltd

Develop with NMUK a unique Kaisan Improvement Technician (KIT) .

Grantham College
Michael Casswell
Moy Park/Fenland Foods

Investigate and develop specialist process control techniques for use in the food industry.

Greenwich Community College
Dr Bolatito Ariyo
Morph/Greenwich Council

Review of current practice - how the Morph project is working - and provide feedback on areas of improvement focusing on green technologies.

Greenwich Community College
Ranjan Pattni
Oxleas PCT

Shadow key functions, create an appreciative inquiry with different groups and undertake a reflection review and 'next steps' plan.

Havering College
Martina Bella
MDVSE

Understand the latest processes used in the design, manufacture and quality control of track day (race) cars.

Kensington and Chelsea College
Akosua Boakye-Nimo
Contemporary African Dance

Build partnerships with fellow practitioners, establishing framework for identifying Contemporary African techniques and reviewing potential to establish company for CAD techniques.

Kensington and Chelsea College
John Bowe
RBK Libraries & Arts Regeneration Department

Analyse the needs of small companies working in design and creative sectors and jointly develop a learning package for SMEs to improve their competitiveness in the use of state of the art multimedia and design resources.

Kensington and Chelsea College
Dr Amanda Hayes
RBK Chamber of Commerce

Analyse equality and diversity policy and practice needs of SMEs, to inform the development of consultancy to assist SMEs in meeting E&D legal requirements in their workforce and the communities in which they operate.

Lewisham College
Shirley King
Top to Toe Salon

Undertake business audit (resources, HRD), review current treatment portfolio and identify areas for improvement and suggest new treatments to introduce.

Kingston College
Liz Ogilvie
Kingston University

Undertake audit of key products in Enterprise Exchange, develop strategy for marketing to SME and build knowledge base around Train to Gain.

Kingston College
Nader Maghaddam
Sash Window Workshop

Develop an integrated information system with ERP functionality, including full business process analysis, to enhance the competitive advantage for the company.

The College of North East London
Dr Geoffrey Whittington
Whittington Hospital

Observe clinical technologists and jointly develop online materials to be used by the hospital for its employees and clients.

College of North West London
Mandy Freedman
Dot Net Solutions

Develop jargon-free marketing and training materials and undertake needs analysis to target key SME sectors (Food, Manufacture and Retail).

College of North West London
Paul Skitt
Ashridge Management Centre

Create plan to develop strong links with FE sector, and develop marketing processes to target and support SME sector.

College of North West London
Feraline Whyte
RETRA

Review the SME business needs in electrical knowledge and selling skills, research impact of the revised Sale of Goods act on business and develop jointly support materials for RETRA membership.

Northampton College
Tony Coles
Lincoln Electric

Investigate the latest techniques and technologies of welding.

Northampton College
Neil Tobin
Inchcape Automotive Ltd

Shadow technical experts working at the cutting edge of rapid vehicle body repair.

Richmond Upon Thames College
David Warnes
LOCOG - ProActive South London

Review the practices that will be required for successful delivery of London 2012 Olympic & Paralympic Games and create programmes to meet any gaps identified in this review.

Richmond Upon Thames College
Shamini Chandran
Stuart Yachts

Build stronger relationships with accountancy employers, review accounting practices, and focus on understanding the future needs of these employers and building programmes to match these needs.

SR Group
Sue Tissiman
Barts & London NHS Trust

Undertake a training needs analysis and develop strategies and work based learning programmes in line with NHS requirements.

Stafford College
Dave Brain
Universal Rubber Company

Review aspects of requirements engineering (including costing) and identify materials and tooling techniques for improved project delivery.

City of Sunderland College
Bill Milestone
Bentley Newcastle

Investigate 'smart repair' systems in vehicle industry

City of Sunderland College
Paul Cambrook
Nebridge Engineers Ltd

Review impact of new IEE Regulations on building industry and investigate latest installation methods used in modern construction.

Tower Hamlets College
Asif Siddiqui
Knowledge Dock, University of East London

Working with Knowledge Dock to engage with various companies to identify their needs and develop consultancy and commercialisation support programmes.

Tower Hamlets College
John Fox
Colour Holographic

Contribute to the design of a hologram viewer, develop aesethetic and material solutions for 3D holographic and modelling problems and develop moulding techniques for reproduction of prototypes and production of master copies.

Tower Hamlets College
Franziska Kaufmann
Future First Technologies

Develop a multi-channel marketing campaign to commercially exploit the company's expertise in Search Engine Optimisation and Search Engine Marketing.

Waltham Forest College
Tracey Edghill
Centre for Environment & Safety Management for Business, Middlesex University

Develop and share HE Knowledge Transfer best practice in dealing with employers focused on improving their environment and health and safety performance, and in turn, share FE best practice in handling SME with HE institution.

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