

Business – University Collaboration

CIHE's Response to the Richard Lambert Review

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Foreword

Richard Lambert sought our views on his review of business-university collaboration in February 2003. He emphasised that “*the main focus of the review is on the demand side – the needs of companies in terms of research and development, the transfer of knowledge, recruiting graduates with the right skill sets*”.

Our response follows discussions with a broad range of Council members and Policy Forum members. A limited survey of some of our member companies has also informed this report. We are most grateful to everyone who contributed to this report, not least those organisations who kindly provided the case studies.

We look forward to discussing this subject with Richard Lambert and officials at our Council meeting on May 8th and to working closely with him thereafter.

This report can be quoted all or in part and is not confidential.

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Contact details:

Richard Brown
Chief Executive, CIHE
Tel: 020 7833 9712
cihe@btinternet.com

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Chapter 1: The Scope of Current Collaboration

In our view, business interaction with higher education is more widespread and firmly based in the UK than in most other countries in the world. Even in the US, interaction is patchy, reflecting the wide variation in US higher education. There is also much more interaction today than there was some 15 – 20 years ago; The Council for Industry and Higher Education (CIHE) can claim some credit for this. However, the aims and interests of higher education and business will always be different as well as overlapping. In considering the range of current interactions and how they might be broadened and deepened, it is important to remember the different aims of both parties.

Equally, higher education in the UK embraces a wide range of universities and colleges with very different missions. This is one of its strengths. Business encompasses an even wider range from multinational corporations (some of which are more like loose federations of small businesses) to micro businesses (sometimes composed entirely of graduates) and corner shops (which may have no interests whatsoever in higher education). There are dangers in oversimplification and generalisation and the views that follow carry that health warning.

Businesses today interact with higher education institutions (HEIs)⁽¹⁾ in many ways. The Business Interaction Surveys⁽²⁾ identify many of these but do not identify the full range as they approach the topic via institutions rather than businesses. (The overall scale of employer involvement in learning including via Modern Apprenticeships, NVQs, HNC/Ds, Foundation Degrees, part-time and work based learning is not always fully appreciated.) A survey of 12 Council member companies⁽³⁾ covering a range of business sectors reveals something of the scope and scale of the interaction from a business perspective:

On average each year these companies:

- spend about £80 million with HEIs on R&D
- spend some £4 million on consultancy
- spend some £.6 million on knowledge transfer
- recruit on average some 2,200 graduates
- spend £.7 million on student placements
- provide some £.5 million to sponsor students at HEIs
- spend some £.2 million supporting students on work experience
- spend some £70 million each year on the development of their workforce, and can identify definitely spending some £6 million of this with HEIs

⁽¹⁾ We refer to HEIs to cover all universities and colleges. References to Universities UK should be read as including the Standing Conference of the Principals of Colleges (SCOP)

⁽²⁾ Higher Education – business interaction survey 2000-01 HEFCE March 2003/11

⁽³⁾ AstraZeneca, BOC, BP, George Wimpey, HBOS, ICI, Mail Marketing, National Grid Transco, PWC, Scottish Power, Taylor Woodrow, WPP

- support HEIs in a number of other ways such as funding chairs, supporting teaching, helping on curriculum development, sponsoring conferences, leading skill sessions, donating equipment and offering travel grants; this support is difficult to cost but certainly exceeds £1 million per year every year. As one member company states:

“As a major recruiter of graduates in the UK, we think it is our duty to foster business knowledge and commercial awareness amongst undergraduates and university staff for whom this is not a specialism”

Business people also serve on Councils or Boards of HEIs and on Advisory Boards and Committees for a wide range of subjects and disciplines.

The income from the activities that can be costed by HEIs was over £800m in 2000-01 (about 7% of total HEI income). The total resources expended by business and their staff would have been considerably higher than this.

We also note that whereas between 1994/95 and 1999/2000 total Funding Council grants for teaching only increased by 7.5%, fees from overseas students and “other income” from commercial sources increased by 28%.⁽⁴⁾ This reflects well on the businesslike approach of institutions and on their management acumen.

We propose to consider collaboration between business and higher education under the following four headings:

- research
- knowledge transfer
- teaching (of potential recruits to business)
- lifelong learning for existing staff.

⁽⁴⁾ *The Internal Economy of UK higher education institutions 1994-2000*, Universities UK & SCOP, September 2002

Chapter 2: Research

The UK spends a worryingly low percentage of its GDP on research and development. As private expenditure in research laboratories is curtailed, so more is being spent by businesses in higher education and a greater reliance is being and will have to be placed on the publicly financed research in such institutions. Given the trends to research globalisation, networks of excellence involving universities and business are becoming an imperative. Thus, for example, BAE Systems has developed a Universities Partnership model. Using this model, the company has identified a series of strategic and capability partners. Sixteen specialist academic groups from different universities, co-ordinated by Cranfield University, address their future capabilities in aeronautical engineering. The EPSRC is also involved.

There would be benefit in the UK establishing a forum similar to the US Industrial Research Institute where leaders from research intensive businesses and universities could meet a couple of times a year. This forum could facilitate an exchange of perspectives on priorities and how common concerns (eg. on IPR or the training of knowledge transfer staff) might be addressed. The R&D Society currently co-ordinates a business perspective. A joint forum with CIHE might be a way forward (CIHE is establishing a joint forum with The Association of Business Schools to bring about closer relationships and understanding in the area of business and management learning).

While we applaud the development of regional science and industry councils (see below), those naturally focus at regional level on science and technology issues.

Recommendation 1:

The DTI should consider how a national forum of leaders from business and academia might be established to address high-level issues of joint concern.

Business will have to pay the fully accounted costs of the research and other services it purchases. The so-called “transparency review” has highlighted that HEI research has been cross subsidised and that better cost and pricing systems are needed. The difficulty with charging the fully accounted cost is that overseas universities (including in continental Europe) may be less aware than UK institutions of the true costs of performing various activities. Hence they may continue to under-price their commercial work. This could leave UK institutions at an apparent price disadvantage.

Recommendation 2:

Universities UK with support from the Government should press for an EU-wide policy on charging fully accounted costs and for agreed costing systems to give effect to this policy.

The UK has a well-developed system for assessing future trends and where limited national resources might best be focused. Business is closely involved in this process through the Foresight teams, through representation on the research councils and through involvement in the discipline based reviews that make up the research assessment exercise (RAE).

Council members consider that HEIs overall:

- rightly devote resources to the fundamental research that may not have any apparent immediate payback but which is vital to long-term knowledge advancement and competitiveness (and is now increasingly only carried out in universities); in their desire to generate more income from business, universities must not reduce their leading edge research
- undertake strategic and applied research that is well focused, of high international standing (*vis* 50% of research departments staff submitted for the last RAE were judged to be of internationally excellent or high standard) and is accessible to those businesses that make the effort to find out what is happening and are well linked into research in key departments they have identified as most relevant for them
- engage (including in specialist colleges) in applied research that closely reflects and is related to the needs of the newer creative industries; the fact that so many staff in specialist institutions are also in business undoubtedly helps; the worlds of academia and business are not separate.

Business confidence in the research carried out in HEIs in the UK is reflected in the investments they make:

- HEIs in the UK earned around £260 million from contracts with UK businesses in 2000/2001, representing 12% of total research income (compared with 10.1% in the USA in 1999) ⁽⁵⁾ HEIs captured over £840 million of business and charity research funds in 1999/2000.

Annex A contains a case-study on the investment by BP at the BP Institute at Cambridge University. Other member companies also find the UK academic base easier to engage with than most others. Equally, there is substantial potential for HEIs to capture further work from businesses. BP spends around \$900 million on technology of which \$300 million is advanced research and only a small percentage of this is in universities. Unilever spends £150 million per year on R&D at its own laboratories and only £15 million in universities. Some of our member companies have made their own submissions and identified the range of research collaboration. The theme of building long-term relationships, confidence and trust is one that recurs.

However,

- the existence and potential significance of the research within universities may not be regularly audited or brought together in a way that can easily be accessed by smaller companies (SMEs) in particular. Structures are needed to capture the intellectual capital on campus and harness it to meet a market demand or potential opportunity. A broad view should be taken of research by HEIs.

Recommendation 3:

All HEIs should carry out annual evaluations of their research activities and ensure that a summary of their activities is accessible to businesses.

⁽⁵⁾ Resources of HEIs, HESDA 2002 , see also CURDS survey December 2001

- while there have been improvements in bringing together information on the research capabilities of institutions, and while both the HEROBC and now HEIF funding streams from HEFCE have raised the interface capability of institutions, there are still few units like Knowledge House in the North East of England. This regional centre is an access point to much of the research that all the universities are undertaking. It is particularly helpful to SMEs that do not have the resources or capabilities to find out from each institution what might be relevant to them. It is also staffed by people who have the experience, outlook and language to face both inwards to HEIs and outwards to businesses and the regional community – those with these capabilities are not common.

Recommendation 4:

The 20 Knowledge Exchanges proposed in the White Paper *The Future of Higher Education* should offer a region-wide or broad sectoral perspective and help businesses of all sizes access HEI research and problem solving across a range of institutions.

Recommendation 5:

Businesses should second staff as part of their career development who have the relevant and rare capabilities to work effectively in such interface centres.

Recommendations 6:

Best practice at research interfacing and knowledge transfer should be regularly updated by DTI/OST with training courses offered for both academic and business staff.

Working at the interface should offer business benefits both to staff and to their businesses. Relative economic advantage springs from networking, including with centres of knowledge creation and application. The DTI/OST has published a guide on good practice in knowledge transfer (as well as on managing intellectual property) and the CMI (Cambridge/Massachusetts Institute of Technology joint initiative) has developed training material for academics.

- IPR issues can remain an issue of debate between institutions and business and can hinder the commercialisation of research. While business considers that IPR issues present a greater barrier to co-operation in the USA than in the UK (the Bay Dohi Act not helping industry), the position varies from one institution to another. Some consistent approaches to IPR have however been developed, for example at Imperial College working with PricewaterhouseCoopers (PWC) and under an umbrella agreement used by Unilever. These might be more generally applied. Seeking agreement on a case-by-case basis is becoming an increasingly disincentive to co-operate research.⁽⁶⁾ While it is right that universities should not lose any commercial benefit from their research, they need to consider whether they are best able to exploit the results. Universities will want to own the research (for publications, RAE ratings and further research) but may want to have agreements on the exploitation of IPR that is held by a commercial partner.

⁽⁶⁾ *Benchmarking Industry Science Relationships* from the OECD also states that sound frameworks for IPR should be in place.

(In continental Europe the position is even more complex to the extent that, according to one international member company, “it is not worth trying to do business with some institutions”).

Recommendation 7:

Good practice on IPR should continue to be co-ordinated and disseminated by DTI/OST in liaison with the Funding Councils with the aim of facilitating a more uniform approach.

The tax credit scheme for R&D is potentially stimulating. However, it is considered to be complex to operate and requires significant resources to disentangle eligible costs from the new product introduction accounts. While the recent proposals in the 2003 Budget are welcome, they do not address this issue.

Chapter 3: Knowledge Transfer

Knowledge transfer and the heightened awareness across UK higher education of its significance and potential has been a success story. Knowledge transfer in all its various forms can play a key role in the development of knowledge regions.

There is no single model that is appropriate for every institution. We favour a greater sharing of knowledge of success stories and the lessons that can be learned. We also believe there is a need to access knowledge wherever it may be around the world and capture it for the benefit of UK plc. This is a different but no less important form of knowledge transfer. Being world-class at accessing and transferring such knowledge can be as worthy an objective as developing and transferring that knowledge within a research intensive university. This aspect might be further developed by the Government in liaison with business and academics who are well networked internationally.

Recommendation 8:

The DTI/OST should work with a group of academics and business leaders to consider how international knowledge transfer might be encouraged.

There are a wide range of activities that can be encouraged in research intensive and non-research intensive institutions and departments. Perhaps the terminology can be unhelpful. The concept of “knowledge transfer” implies a supply driven approach to meeting business needs. While the spin-out or start-up of businesses as a result of technology or knowledge transfer is important, it is a minority activity. There is a danger that the approaches put in place to distribute funds could over focus on the transfer aspects with metrics that reinforce this approach.

From a business point of view, the issue is “how can higher education help solve my business problem?” Looking through the business end of the telescope produces a different approach and a different set of metrics against which to judge and reward performance. It is our suspicion that some modest scores in the RAE hide excellence in business networking. We also reinforce the point made above, that if an institution does not know what it knows, it is unlikely to be able to say whether or not it has part or all of the solution to that business problem. Regular internal audits and interface units that are embedded in an institution rather than grafted onto the outside are needed.

Recommendation 9:

HEFCE working with a range of Government Departments should develop suitable and agreed metrics on excellence in business and community networking. Businesses should be involved in that process to ensure a customer viewpoint is incorporated.

A change of nomenclature from “knowledge transfer” to “business and community networking” might also be appropriate. **Annex B** notes the way Salford University supports SMEs through learning clubs and a suite of 210 half-day teaching modules.

The Government rightly makes much of the spin-off rate of businesses by HEIs. (“In 1999-2000 the UK created more spin-off companies per £million of research expenditure in universities than the US.” *The Future of Higher Education* para. 3.2) But the survival rates of these companies also need to be considered. When they are, the UK relative performance against the USA is not so impressive. This may lead to two conclusions:

- UK HEIs should focus more on start-ups than spin-offs (as was recommended in our report *Knowledge Transfer: towards a strategic framework* by Philip Ternouth, CIHE June 2002)
- A strategic framework for knowledge transfer is needed by HEIs with institutions being more embedded in relevant networks so as to reduce costs and risks. In our report *Knowledge Transfer*, Philip Ternouth (June 2002) noted that interaction in networks is a significant feature in the US; faculties are encouraged to consult, develop collaborations with industry, serve on company boards, take leaves of absence (including for consultancy) and to have a role in start-up companies.

Recommendation 10:

Universities UK should invite vice-chancellors and principals to encourage academics to serve on company boards, take leave of absence for consultancy, be involved in start-up companies and in other ways have regular dialogue with external organisations; promotion and reward should have regard to such experience.

As the Government recognises, much interaction has to be fostered at the regional and local level. Hence we support the drive to devolve funding for business networking to RDAs. But all RDAs need more fully than at present to appreciate the various roles that HEIs can play in regional wealth creation. Implementing the Porter proposals to move UK business up the value chain, developing more clusters of leading edge sectors, developing more top quality management at all levels require HEIs (including their business schools) to be placed centre stage. RDAs will also need to improve their overall capability, transparency and accountability.

Given the patchy nature of current RDA capabilities, initiatives such as the North West Science Council that bring together experts from businesses, research institutes and academia in liaison with the RDA should be a model for all English regions. They are important for linking the science, technology and business agendas and developing strategies for addressing regional economic development. Their focus on science might in the future be broadened to include the so-called “creative industries” or parallel fora might be developed.

There needs to be better regional and local linkages including with other research laboratories, with the Learning and Skills Councils (LSCs), Further Education colleges, Sector Skills Councils and the more general business and financial services sector so that the research and knowledge transfer capability can be harnessed in support of technology clusters. (The Government’s response to the *Better Regulation Task Force Report on local delivery of central policy*, December 2002, para.1.2.3. and its recognition of the need for joined-up policy and action is relevant.) UK regions have to create the rich soup that characterises the more entrepreneurial areas of the USA. Developing and being part of networks is crucial to achieving this. New relationship models are needed and current good practice needs to be spread. BAE Systems are examining new partnership models involving the company, academia and regional government. Corus has the Netherlands Institute for Metals Research that involves five universities, at least ten companies and the Dutch Government. In Wales Corus involves its supply chain in the Engineering Doctorate programmes and has other multi-institutional partnerships, including sharing their technological vision with academics and hence inspire students.

Annex C gives the example of San Diego as one where a rich network of economic development centres exists. This case study especially emphasises the role of Community Colleges in the development and support of clusters of excellence. The note implies that FE colleges and non-research intensive HEIs have no less a vital role in economic development as internationally focused research intensive universities.

Recommendation 11:

All RDAs should convene Science and Industry Councils that involve their HEIs, other research laboratories in the public and private sectors and (where appropriate) other organisations.

Recommendation 12:

All RDAs should consider whether suitable fora exist for addressing the knowledge and skill needs at all levels in key sectors of the regional economy.

We are pleased that one of our Trustees and Council members, Sir Tom McKillop, will be advising the Government on the extension of regional science and industry councils and helping to see that good practice in promoting innovation and knowledge transfer is shared across the regions.

Business leaders can play a crucial role because they are on the boards of all those organisations (RDAs, HEIs, LSCs, FECs etc). They can encourage the linkages and networks that are at the heart of successful learning regions. To perform this role, they need:

- clearer guidance on the regional economic and competitiveness strategy and on the proposals for specific business sectors and clusters
- to have strategic issues brought before the Councils of the HEIs on which they serve, including proposals on the mission focus of the institution, the role and nature of possible partnerships between institutions and of strategic alliances with specific sectors or businesses; not all Councils use the business talent that is in their midst while the collective talent that resides across the sector is not as well tapped as it might be.

Recommendation 13:

The Council of University Chairmen (CUC) should share better and develop policies with Universities UK and should facilitate and encourage chairs of institutions to ensure that their Councils are better informed on strategic issues and have regular opportunities to discuss the strategic options for their institutions.

Most knowledge transfer takes place through students and graduates working in a range of businesses both part-time and full-time. The learning experience and the process by which students make the transition to the world of work is thus central to this review.

Chapter 4: Teaching and Employability

What do employers look for in the graduates they recruit?

There has been considerable work on the capabilities and attributes that employers seek in the graduates they recruit. While it is naïve to talk about “employers” as though they are a homogeneous group (there is little in common between an Astra Zeneca and a corner shop or hairdresser), most employers would recognise the categories and attributes given in **Annex D**. This categorisation reflects the conclusions of the report by the DfES on *Work Related Learning* (DfES March 2002) and other work by employers and employer led organisations.

Do graduates have what employers seek?

Although some graduate recruiters might continue to seek “oven ready graduates”, we are clear that it is not the job of higher education to produce such “creatures”. It is the responsibility of businesses to provide the specific skills, detailed knowledge and work culture appropriate to their businesses and sectors. In our view the more enlightened employers recognise the progress that has been made in recent years to develop employability in students, though more could still be done to develop greater team working, interpersonal and communication skills, especially in disciplines where the world of work is less in the consciousness of academics.

Employers can also help in areas where they have particular expertise:

“As a major recruiter of graduates in the UK, we think it is our duty to foster business knowledge and commercial awareness among undergraduates and universities for whom this is not a specialism”. **Annex E** notes some of the work being undertaken by PricewaterhouseCoopers.

Recent surveys suggest that employers are generally satisfied with the skills and knowledge of their graduates (Mason NIESR ⁽⁷⁾). UK students are also generally satisfied with their HE experience – and more satisfied than their EU peers (*The Employment of UK Graduates*: CHERI for HEFCE, June 2001). The vast majority also use the knowledge and skills they have acquired and developed in their jobs and this helps to grow the organisation where they work. ⁽⁸⁾

Despite the QAA having encouraged each subject discipline to articulate via benchmark statements the attributes they aim to develop in students (and credit should be given for an effort that is not apparent in other countries), businesses and students are still not fully aware of the capabilities that these disciplines develop. In part this reflects the different language used; in part inadequate liaison with employers. This is perhaps particularly the case in subjects in the arts and humanities where employer contact has historically been weak.

⁽⁷⁾ *How much does HE enhance the employability of graduates* NIESR 2002 The Scottish Employers Skills Survey 2002 also indicated that 75% of employers reported recruits from HEIs were well prepared for employment in terms of general or core skills.

⁽⁸⁾ *Graduating into Employment*, IES 2001: *Working Out*, Elias IER, *Graduates Work*, Harvey

Recommendation 14:

The QAA should encourage all subject disciplines to better articulate in language that is readily understandable and accessible by students and employers the employability characteristics they develop in their students.

How can businesses improve the attractiveness of career paths?

There is a high attrition rate amongst graduates (Labour Force Survey shows that less than a quarter of graduates aged 23-27 had been with their employer since age 22). While staff turnover is inevitable, where this arises from mismatches between expectations and reality or from inadequate information, there is a high cost for employers (wasted recruitment and initial training) and for graduates (uncertainty, slower growth of private and social returns to learning).

The higher education careers services continue to need additional resources, additional national websites from the Careers Services Unit (CSU) that can help them appreciate the importance of generic skills and guide students and the ability to strengthen links with local small employers. All employers can do more to offer quality work placements and projects that enable students to gain experience of various sectors as well as add value through project work while with employers. Schemes such as TCS (previously the Teaching Company Scheme) and a variety of schemes dealing with student work experience offer good practice that should be co-ordinated. A national quality work experience brand embracing the current myriad of schemes (STEP, Business Bridge, Work Bank, Virgin Student, etc) could raise awareness amongst small companies of the business benefits.

The nature of work is changing ever faster and hence personal capabilities (such as problem solving, team working, communication skills) are in even greater demand. But there can be a mismatch between the process of learning and the process of work (which revolves around problem solving in teams). Hence graduates can underachieve or take time to realise their potential.

There is also less emphasis in the UK on the creation of wealth (as against just getting a job), on enterprise and entrepreneurship. **Annex F** offers a case study from one of our Council members Alec Reed CBE and his Academy for Enterprise. There are many other examples of how enterprise and entrepreneurship is being developed, (including at Cambridge via the St Johns Innovation Unit).

Those from lower social groups continue to get poorer jobs; this may be more a function of confidence, job search and interview techniques such as lack of key skills (*Access to What?CHERI,2002*). Employers discriminate against those from certain institutions that are most likely to have students from lower social backgrounds and are generally not aware of good equal opportunities recruitment practices (*Financial Returns, Conlon*). Our report and accompanying guidelines *Recruiting from a Wider Spectrum of Graduates* offer business arguments for non-discriminatory recruitment practices. As with so much good practice, the issue is how to disseminate the lessons and good practice to a wider audience.

There are many examples of HEIs linking with employers to improve student employability, as shown in the Universities UK's booklet *Enhancing Employability, recognising diversity* (July 2002), but there has been little attempt to draw together the key lessons on what works and why and what might be the conceptual framework for a more consistent approach across the sector. HEFCE has established a group to

draw together good practice and disseminate it (ESECT), but this has little employer involvement and no remit to suggest a strategic framework.

The attractiveness of graduate career paths can also be enhanced by such schemes at the EPSRC Eng D programme. The combination of technical with business training, the style of part-time activity and EPSRC funding make this scheme attractive. It might be rolled out to more HEIs and fields of study.

For some jobs with employers, there will be no substitute for detailed subject knowledge. They will scour the world in their “war for talent”⁽⁹⁾. The UK has to offer the highest quality learning experience so its graduates can compete in this world league. But most jobs require greater breadth, especially jobs in smaller companies that increasingly take the majority of graduates.

Does employer involvement improve employability?

There are good arguments for HEIs to link closer with businesses. There is a positive correlation between employment six months after graduation and students having undertaken a sandwich placement (see HESA returns). Those universities such as Surrey, Bournemouth and Brunel that require students to have work placements have high levels of graduate employment. (see also Geoff Mason NIESR⁽¹⁰⁾ report and work by ASET).

Employers have also shown by their recruitment and the additional wage premium they pay that they value students who have undertaken work experience, have reflected on their experience and can articulate the lessons learned (see AGR annual surveys).

Employer involvement in course design and delivery has also been shown to be positively associated with the quality of subsequent jobs undertaken by graduates (Mason NIESR).

But attempts to involve employers in the curriculum via business case studies and simulations (eg. the University of Leeds Context project) have generally not been successful. The costs to individual employers outweigh the wider external sector and national benefits in terms of raising awareness on various business sectors, helping to update the curriculum and improve student employability. Where societal benefits exceed individual benefits, there is a justification for some form of subsidy.

The Government offers employers tax credits for research; business engagement in learning is no less important and warrants similar treatment.

Employer organisations have to be as responsive to employer needs as education institutions. Some professional bodies exert great control over the curriculum, notably through recognising and accrediting awards from particular departments. Yet they can be a force for conservation, for limiting the evolution and cross-boundary workings of disciplines (eg. systems engineering) and not encouraging entrepreneurship. If professional bodies are not more innovative and fleet of foot, then leading employers will want to exert greater internal pressure on them or even

⁽⁹⁾ A balance of the capabilities at Annex D is what most organisations seek in the people they recruit.

⁽¹⁰⁾ “The probability of graduates being employed six months after graduation... was found to be significantly and positively associated with them having participated in a sandwich placement.”

consider separately accrediting courses as part of a closer strategic relationship with particular institutions.

Linking business and higher education closer together is important for enhanced regional competitiveness and productivity. To paraphrase a recent DTI report;⁽¹¹⁾ “There is a skills-productivity paradox – why are the regions “long” on qualifications but “short” on productivity and earnings? We must not build a paper knowledge economy based on a thriving qualifications industry rather than a demand-driven economy with learning that meets different business, skill and educational needs.

One way in which closer linkage can be effectual (especially with smaller companies) is via work experience that revolves around problem solving. Most students now work their way through higher education. Rather than work in retail or behind bars, they could help small businesses solve business problems. This could raise student awareness of the realities of working in smaller fast moving organisations and improve their entrepreneurial capabilities. It could help businesses appreciate better the capabilities that modern students have as well as help them solve business problems. It could enable students to take back their experience in the form of case studies to HEIs thereby helping them to link theory and practice, and the curriculum to be refreshed.

The current STEP and TCS schemes are excellent but limited. More flexible schemes should be supported regionally under a national brand.

Recommendations 15:

The subject centres should consider how courses might incorporate problem solving in teams. There should be funding premia for such courses both to recognise the additional costs involved and to reflect the subsequent value from such a process of learning to the individual and society.

Recommendation 16:

Businesses should consider how the cases developed for their internal management development programmes from a broad range of subjects might be adapted, migrated and supported in HEIs. Businesses should have a tax credit to reflect part of the cost involved.

Recommendation 17:

There should be a central data-base of business case-studies and simulations with details of how these can be supported on-line. This should be funded by the HE Funding Councils.

Recommendation 18:

The Government should encourage employers to increase the number of students they take on work placements and projects (including via international placements) that are assessed and accredited as part of the curriculum. Part of the costs should be supported via tax credits. The Treasury should publish a register of those claiming such credits and hence seen to be committed to improving the capability of students.

⁽¹¹⁾ *A Regional Perspective on the Knowledge Economy in Great Britain*; the local futures group for DTI, February 2003

Recommendation 19:

A UK wide scheme for recognising and categorising quality work experience that helps students address business problems throughout the year should be developed by the National Council for Work Experience (NCWE) with funding from the CSU matched by Government funding. RDAs should support the implementation of such schemes that have the quality seal of approval.

Chapter 5: Lifelong Learning

The importance of networks

Of the £23+ billion per year that the DTI has estimated businesses spend on workforce development (at all levels), HEIs capture probably only about £250 million. UK higher education has missed out on the market for work-based learning that has been captured by private sector providers. This may partly be because it has been more comfortable and lower risk for HEIs to meet the growth demand for young students where the volume and price has been fixed and the approach to supplying products better matches a supply-side mentality. It may be that not all HEIs are good at networking with employers (especially SMEs) and rely too much on *ad hoc* contacts. In some cases it may be that they are too traditional in their approach in terms of learning content, style, timing, place and mode of delivery (27% of business skills training in Europe will be through e-learning in 2005 according to IDC January 2002) but how much HEI learning will be in this mode?

Annex C noted how a US Community College system responded to the opportunity to meet the learning needs of a major growth employer. A significant feature was that the network of colleges sat down with the employer to design learning products from the ground up to meet the specific business need. There are examples in the UK of similar joint approaches (the KLM and engine repair Foundation Degrees are examples in the aerospace field). Foundation Degrees (FDs) offer one way for businesses to work closer with institutions in developing and delivering the curriculum. FDs that are work based and geared to the needs of existing staff offer particular attractions. But a more radical rethink on relationships with business customers is needed. The solution to capture a larger share of the corporate learning cake will rarely be better marketing of existing products (as some HEIs think). The products themselves have to be jointly developed and delivered in ways that meet customer requirements.

To develop a range of learning packages to meet a specific sector, supply chain or major business need implies agreements between institutions (both HE and FE) to support the delivery of such learning. It suggests a learning framework at regional level on how the various markets will be addressed. RDA and LSC funding to facilitate such co-operation and collaboration will need to be accessed. This requires HEIs to network closely with these bodies and with relevant Sector Skills Councils. The Small Business Service will also have a role to play in pointing small companies to what is available. Meeting business needs for work-based learning requires a different approach to teaching undergraduates.

Given their often higher overhead structure (but equally often higher overall quality), HEIs have to secure economies of scale and reduce their dependence on frequently small and difficult to access local markets. Small companies are notoriously reluctant to pay the market price for learning and HEIs understandably find it difficult or not worth their while to make inroads into such fragmented markets. Working with Sector Skills Councils on sector wide learning initiatives and with RDAs and LSCs on more local markets offers the opportunity to develop and deliver learning that is both focused and to a scale that is economic.

Recommendation 20:

Sector Skills Councils and RDAs should establish learning frameworks within which all parties can co-operate to deliver work-based learning on a scale that is both economic as well as meeting sector and regional needs.

Developing management talent

The Lambert Review will also want to consider the role of business schools in meeting business needs and the ability of businesses to access and implement world-class management practices. The Association of Business Schools (ABS) is able to note the broad range of provision and how far this reflects business needs. However, **Annex G** by one of our Council member consultancies, McKinsey & Company, notes the difference in performance of foreign and UK owned businesses and concludes that “in these foreign companies there was systematically better use of world-class management practices”. This raises issues about the ability both of business schools to impart appropriate management learning and of businesses subsequently to apply that learning.

Recommendation 21:

The Government should help fund research by a new Forum for Business Leaders and Deans of Business Schools (as recommended by the relevant sub-group of the Council on Excellence in Management and Leadership). The Forum will be established by CIHE and ABS to bring about closer working and understanding in the area of business and management learning.

Excellence in management development lies scattered across a range of UK business schools as well as internationally. It is not easily accessed by business leaders or their senior management teams. CIHE has considered establishing a largely virtual forum through which latest thinking on business problems could be made available and a network of world-class business academics established. This concept might be worth developing further.

Chapter 6: Governance, Management and Leadership

The terms of reference of the review invite Richard Lambert to “seek views on present governance, management and leadership arrangements and their effectiveness with respect to research and development, knowledge transfer and skills progression.”

We wish to stress that in our view the higher education sector has managed itself well over a period when the unit of teaching resource has fallen inexorably for over 30 years. (Some private sector businesses have not survived so well or so long). Their productivity improvements at least equal those achieved across the public and private sectors. If some institutions have appeared to lack decisive leadership and a clear vision, that in part reflects the absence of a policy and funding framework conducive to long-term planning.

Good governance is part of the means for realising institutional goals. HEIs are not homogeneous (no more than are other businesses in the private or not-for-profit sectors) and we wish to encourage diversity and flexibility in response to different customer, client and partner needs. Hence it does not automatically follow that the current range of governance arrangements are inappropriate. Equally, the range needs to be appreciated. It is not true that the historical arrangements that characterise Cambridge University (for example) are characteristic of the sector at large.

The constitutions of HEIs reflect their different pasts. Some “ancients” were founded as communities of self-governing scholars and their constitutions reflect this. The pre-92 universities have a variety of constitutions reflecting the various Acts of Parliament under which they were founded. Generally, however, the powers of the vice-chancellor (eg. to choose the members of the senior management team) and governing body (and the number of non-academics it should contain) are more restricted than for post-92 institutions (though as one Chairman has said “they are not a barrier or excuse for poor leadership”). The constitutions of post-92 institutions were established by the 1992 Further and Higher Education Act. This gave vice-chancellors greater powers to manage than is generally the case with the pre-92 institutions, ensured that there were a majority of “independent members” on governing boards - which determines the overall strategy and have fiduciary responsibilities - and allocated responsibility for academic matters to academic boards. (“Independent members” were defined as “persons appearing to the appointing authority to have experience of, and to have shown capacity in, industrial, commercial, or employment matters or the practice of any profession”).

Some academics lament the general trend away from collegiality and consensus towards a more managerial style of governance. But many outsiders who are concerned about efficiency and effectiveness are critical of what they see as the eagerness of certain academics to block changes. They see the powers invested in Senates in pre-92 institutions as forces for conservatism, delay and obstruction. Some business leaders are also surprised that so much academic loyalty is to their individual disciplines rather than to the institution that pays their wages. Within institutions, the roles of administrative staff are seen as not always appreciated by academics who view them merely as support rather than central to the running of complex businesses.

The two issues of employment protection (historically claimed beyond the norm elsewhere) and the protection of academic freedom have to be clearly separated. It

is of fundamental importance that academics can express unpopular ideas without fear of unemployment. But we do not know of any instance where a pre-92 university has successfully made an academic redundant on the grounds that the post is redundant. The recent approval of a new Model Statute may help institutions to address this. The Government should keep the situation under review as institutions decide whether to adopt this, and should be prepared to take any further steps to assist institutions to introduce employment practices.

In our view, it is possible to harness the strengths of both collegiality and managerialism. The former is in keeping with an approach that rejects the earlier control/command style of leadership and seeks a shared vision. It can support multi-disciplinary teamwork on common issues and can ensure that the views of wider social partners and students are taken into account. Equally, HEIs are major businesses. The sector has an annual turnover of some £13 billion and deploys assets of £34 billion. Management structures and systems have to be appropriate to such major organisations. A cadre of professional managers with financial capabilities backed by appropriate systems is as vital for HEIs as it is for any major business. The quality of the student experience and the effectiveness with which institutions deal with external clients and partners depend on their being professional in all that they do.

Businesses are interested in the issue of governance, management and leadership because, in their interactions with HEIs, they need to know:

Is this an institution with which I should and can do business? Hence,

- what is the mission of the institution, is it clear, realistic and capable of being delivered over the long-term?
- what is the quality of the senior management team, is there adequate succession planning and staff development; is it worth my making a long-term commitment to the institution?
- does it have the systems in place that can assure me that if I invest in it or do other forms of business with it, that I am likely to get good value for money and get what I have contracted for? Is it efficient and effective?
- is it interested in developing ideas in partnership, does it have the structures in place so it can understand the needs of business and is it likely to be flexible and responsive to meeting my needs?

Given the wide variation in governance arrangements across HEIs in the UK, it is not possible to answer these questions for the sector as a whole. Equally, there are institutions that are excellent at one aspect of the interface with business, eg. research, and hence secure investments and have relationships despite their inadequate governance. However, we consider that businesses are likely to be most interested in partnering for the long-term if the following guidelines are followed (these augment the Guidelines from the CUC):

- the governing council should have a majority of “independent members” (as defined in the 1992 Act); - as in the CUC Guidelines; the Dearing Committee also made useful recommendations
- the senior management team is selected for their management abilities; this requires there to be in place systems of annual staff appraisal linked to personal development and training plans (recent independent reports from HEFCE have noted the uneven development across the sector and limited progress in certain key HR areas)

- there are explicit written sets of delegations, responsibilities and accountabilities along with written and transparent performance targets and associated systems of rewards – as in CUC Guidelines
- managers have the delegated power to manage with clearly devolved budgetary powers combined with a system for clear accountability
- the academic committees that rightly translate expertise into curriculum and research programmes and inform the core activities of the institution are advisory (except in the case of Council and Audit) with the final decisions being for the senior management team.

Other questions related to leadership and management raised by businesses concern:

- the adequacy of financial systems;
- the management of the estate;
- leadership, management and the implementation of modern HR policies and practices.

Internal cross-subsidy (notably of research) has resulted in a lack of investment in infrastructure. In part this undoubtedly reflected inadequate financial systems so that the scale of the cross-subsidy was not fully appreciated. In part it reflected a conscious policy decision. The so-called Transparency Review has revealed the scale of the problem and the need for R&D to cover better its overheads. Equally, many businesses cross-subsidise and the practice does not of itself reflect poor financial management, unless it is sustained.

The sector will indeed want to look more consistently at how it manages its estate to maximise the utilisation of assets. But an HEFCE benchmarking initiative is underway and the results should be shared across all institutions.

On leadership, management and HR policy and practice, higher education lags behind most other sectors. In order to ensure that these policies and procedures do not work in a vacuum, an understanding of the key stakeholders is required to provide clear strategic direction. This then translates into HR policies and practices such as recruitment, reward, competence (professional qualification and CPD, technical and behavioural training and development) aligned to meeting the needs of the key stakeholders ie the student, the staff and business community. A robust performance management system would be the underpinning process to achieving the rest. It may be that to gain the knowledge already available within the private sector, managers could be brought in with the sole purpose of undertaking these tasks and leave the lecturers, academics and senior academics to design and deliver fit-for-purpose, customer-led HE qualifications, developing the relationship and stakeholder management skills required to achieve this. Alternatively the opportunity to develop business management knowledge and skills should be made available to Heads of Departments internally.

Our involvement in the pilot mentoring scheme for senior academics has shown how both parties can learn and benefit from sharing experiences and issues. We also consider that the proposed Teaching Quality Academy should engage business expertise given the role of institutions in developing employability of students and the desirability of business people being involved in both the development and delivery of up-to-date curricula that reflect the concerns of the world of work.

Closer interchange between academia and business at all levels should help HEIs be even more innovative, entrepreneurial and develop both the tenacity and immediacy that characterises our best businesses. Reward structures will need to reinforce this culture change and it will require committed institutional leadership backed by additional funding to ensure changes are implemented.

One of the biggest impediments to good management and leadership has been funding uncertainty and the effect this has on strategic planning. In this climate, a variety of funding initiatives from the Funding Councils and from Government only distort further the missions of institutions and the judgements of senior managers. They produce leaders who have shown themselves to be adept at juggling conflicting agenda, responding to initiatives and managing continuing reductions in Government funding. The White Paper *The Future of Higher Education* must usher in a period of greater financial stability and create some of the conditions needed for greater autonomy, diversity and responsiveness to customer, client and partner needs. Different management and leadership skills will be needed and wider business experience will be even more relevant.

At the same time, managers need to be able to manage their institutions. They need to have control over the key determinants of business performance (as the world-class private universities have in the USA):

- the number of students they can recruit;
- the price they can charge those students;
- the cost of their major cost input – staff wages.

No business can perform effectively if it has little control over its customer base, the price it can charge for its products or what constitutes its major cost. Higher education is no different. Greater trust and a genuinely lighter touch by Government and its agencies should encourage greater entrepreneurship and innovation (but also risk). Reduced intervention is a principle accepted by the Government for other businesses in the private, and not-for-profit sectors. It should be the guiding principle for the business of higher education.

Recommendation 22:

The CUC should develop its guidelines in the ways proposed above and seek the legislative changes needed to implement them.

Recommendation 23:

Universities UK should access business experience as it develops a Leadership Foundation with funding from the Funding Councils.

Recommendation 24:

Universities UK and the Funding Councils should ensure that management development is available for all staff at all levels, both academic and non-academic.

The BP Institute at Cambridge

It is some three years since development work began on the new BP Institute at Cambridge University, dedicated to breakthroughs in the fundamental science and engineering of multi-phase flow. BP has committed to \$40 million of funding for the Institute over 15 years.

There is a BP Professor in post, as well as two full-time lecturers. A laboratory has also been built. There are more than 40 researchers and students using funding from sources other than BP. It is also attracting senior researchers from around the world to spend periods working there. The Institute researchers are already carrying out significant and relevant research. They are free to work on problems related to fluid flow that offer the greatest possibility of breakthroughs in basic understanding. They are also free to publish all their results.

In the broadest sense, the Institute serves as a window from Cambridge into Industry, and from BP into the world of cutting edge scientific research. This relationship is being developed through specific research projects and mutual challenge to enhance the value to both Cambridge and BP.

Fundamentally, the Institute is a joint venture with Cambridge University across five departments (Earth Sciences, Engineering, Chemical Engineering, Chemistry and Applied Mathematics), reflecting the belief that the greatest advances in science are occurring at discipline boundaries. The research team will eventually grow to about 60 by attracting research students and temporary positions along with five endowed faculty positions.

The Institute seeks to increase the precision of the prediction of how oil and gas flow out of underground reservoirs, through pipes and buildings. Facilities in West Cambridge house the Institute, with extensive fully functional laboratories in other buildings nearby.

Research areas already underway are:

Colloidal Dispersions: alignment of clay platelets under varying degrees of shear.

Reservoir genesis: turbidite deposition, grain-size sorting, role of clay.

Porous media: gravitational control of acid injection on well stimulation.

Compressible flows: flow of gas-liquid mixtures in fractures, pipes and chemical reactors.

Complex flows: non-Newtonian, shear thinning and thickening flows

Ventilation flows: under-floor/point-source heating – energy and ventilation efficiency; gas/smoke dispersal in buildings following explosions. This project is funded under Cambridge-MIT Institute, and has an additional \$2.5 million of BP funding.

The ways in which BP and the BPI work together are evolving and can be very flexible, but listed are three approaches which are already proving useful:

Short Course on Understanding Flow in Porous Media - this presents a radical view of the fundamental physics and stimulates conceptual understanding and inquiry. Participants are also encouraged to bring along problems from their own work for discussion.

Innovation Peer Assist - these can draw on researchers from the BPI and from the greater Cambridge community to participate in workshop sessions aimed at topics identified by BP business unit teams; the scope can range all the way from opening up option creation to focussing down on problem solution.

Research Projects - different of types of project are possible, ranging from Summer Internships of students, to temporary assignments of BP staff to collaborate at the BPI, to sponsored projects undertaken by BPI researchers. Equivalently, the project scope can extend from scoping inquiries to more specific challenges within the BPI remit of Fluid Flow research.

Mastering Enterprise in SMEs – Developing a Learning Network Through Small Business Executive Clubs (M:Ent)

Prof James Powell OBE (Project Director) & Rob Day (Project Manager)
Salford University

The Project, the Team and Early Success

The aim of the M:Ent is to use the educational skills of five of the region's HEIs to develop a network, support mechanisms and learning materials to stimulate life long enterprise learning at masters level for the region's small and medium sized enterprises (SMEs). This is of clear benefit to the economic well-being of the region and entirely consistent with the recently published Regional Economic Strategy (2003). To date the partner HEIs have developed twenty-one distinctive and bespoke masters level M:Ent enterprise modules consisting of 210 enterprise learning packages designed for, and specifically to be offered to, SMEs in the North West. These learning materials have been made available in the form of a web-based knowledge bank of tightly focused, bespoke modules at Masters level, with a series of e-Master classes under development. The e-learning is supported by a variety of traditional Master Classes and Enterprise Clubs based around the best principles of Action Learning, an approach that has universal acceptance as a valuable educational tool for the region's SMEs.

Comments from Satisfied Small and Medium Sized Enterprises

The Action Learning Approach - underpinning the M:Ent programme - has led to real improvements to the profitability of my company 4 D Renovations. We have implemented the actions, which were identified within the small business club and have increased profitable work, in profitable sectors....by over 36% in the first month after I started in the programme.... And we have also reduced work on less profitable work and less profitable sectors....So now I am now asking penetrating questions of myself, even while shaving, and getting powerful results in this way.

Graham Walsh CEO, 4D Renovations

The main lesson I have learned from this learning approach is quite simple. I've worked in the construction industry all my life and have always found it adversarial. This approach has taught me that if we work together long enough, with the right support, we can share better ways of working.

Ian Cooper, Eclipse Consultants

I can thoroughly recommend this learning approach to others. It was an eye opener to me as Chairman. We used the approach with my younger staff and it has definitely changed the culture of the company. Young staff who were not involved in policy making and strategy are now playing a full role. It has led my company to have an eighteen-month lead over our competitors.

Colin Harding, Chairman, George and Harding

The reason I came on this course was I was becoming stale. When I came to the first session it was obvious. I had lots of energy, but I needed to focus in what I was doing. The forum was perfect. In answering other peoples' questions I was answering my own problems... I firstly looked at my advertising. I was wasting £8 to £10 grand per year, but it was not working. After discussions and support I produced my own newsletter to my customers...Within two months I had a 200% improvement in sales.. I opened my accounts to colleagues in the club and it was soon clear how obsolete my ideas were....but they helped me make huge savings in professional fees, utility bills, facilities etc.. During my involvement in the Business Enterprise Clubs I have also increased turnover significantly and doubled the number of my staff.

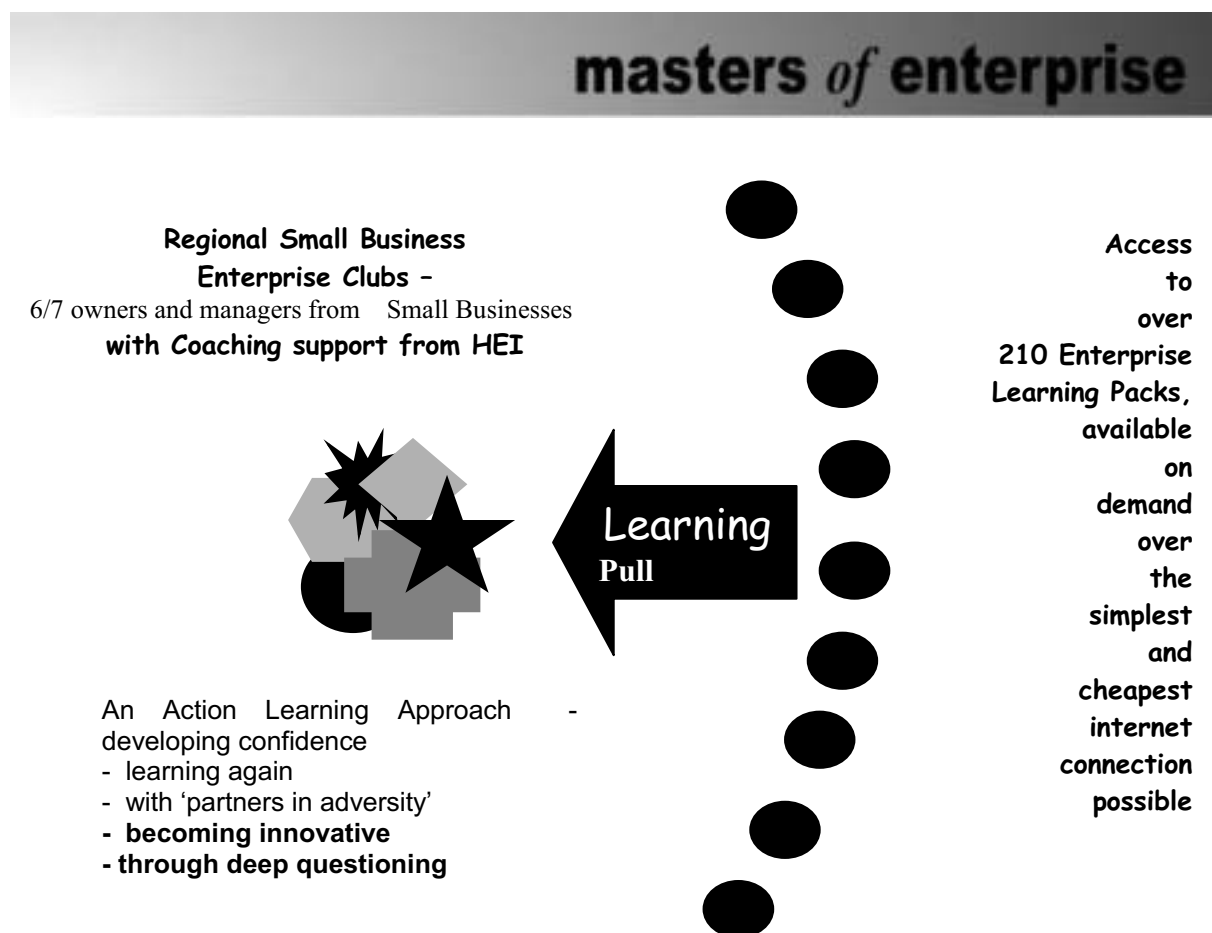
Steve Holt MD of M.Holt Ltd.

Annex B

This North West Universities consortium is led by Salford University and comprises the Higher Education Institutes of Liverpool John Moores, Manchester Metropolitan, Central Lancashire and Bolton. The consortium has also been developing a region-wide network of Small Business Enterprise Clubs to enable the SMEs, local to each university, to learn together for mutual benefit. There have been many outstanding business development and innovation successes to date; see selected quotes from a range of the region's SMEs in the box below which were video recorded by other SMEs and can be viewed as powerpoint vignettes.

The project has also enabled the HEI consortium designing the M:Ent to learn itself how to work together, developing a 'coincidence of purpose' and collaborative action, to provide a powerful educational approach for the good of the region.

The SME owners and managers on this programme quickly acquire specific working knowledge and skills to enable themselves and their businesses to tackle particular problems, issues and awkward strategic and operational business situations. The programme was specifically designed to meet their stated aspirations, needs and demands, which were understood as a result of a series of comprehensive local market intelligence studies. Furthermore, by close working with the SMEs on our pilot programme we developed our materials into best practice and have already earned the right to provide them with a sustainable learning experience. Key in this development is the creation of a non-threatening learning environment built on trust (one far removed from their existing experiences of HEIs engagement) which caters for applied, real-time enterprise learning that can be accredited and accumulated, over time, into enterprise qualifications. The figure below shows an overview of this development in a diagrammatic form.



The M:Ent programme addresses strategic issues in the NWDA Enterprise Strategy, has the support of the North West Universities Association (whose remit is to find ways of engaging HEIs through innovation partnerships to support enterprise in SMEs) and contributes to regional competitiveness. The Competitiveness White Paper makes a clear connection between skill levels and productivity and the programme responds to the government's strategy "giving new entrants to the labour market new skills they and business need to succeed". SMEs will be engaged in a combination of ingenuity, excellence, innovation and enterprise and HEIs are seen to be key to creating a more dynamic, innovative contribution to the economy by facilitating the development of more innovative and creative, high quality SME owner/managers of the future.

Particular Results and evaluation of M:Ent project to date

- linkages have been developed with a variety of local/regional partnerships and SMEs
- data is being generated/gathered through the project in relation to the skills needs/gap through SMEs and partnerships
- the impact on the skills base is being addressed by the project at the outset because it meets the very specific needs of SMEs flexibly and with results (benchmark position)
- the implementation of a marketing plan has been undertaken with local tactical variations in each individual HEI under the guidance of the Project Manager
- the M:Ent web site has been designed in line with SME input and feedback
- the M:Ent portal has been designed and developed to accommodate the registration and tracking of SMEs across the region in all 5 project partner HEIs
- the validation process for the M:Ent in each partner HEI has been undertaken to ensure complementarity so that SMEs can move between HEIs for modules and a 'Generic Validation Document' has been accepted by a partnership validation panel, which includes external representatives. This has been a ground breaking and unique achievement and while there have been differing points of views and academic differences, a working relationship of trust has arisen from the determinism of all concerned to push forward to achieve the overall goals
- Young Entrepreneur case study material has been fed into the project.

Particular Regional Impact to date

- Action Learning targets have been hit and exceeded. Very positive feedback has already been received from Chamber Business Enterprises, Trafford Park Business Forum and, importantly, local SMEs owners and managers because it meets their very specific needs in an unique learning environment. A number of SMEs have been through the first cohort, assessed and are participating in the second and third rounds of Action Learning Sets. Many results from these 'Innovation Sets' have been impressive such as increase in profits, number of employees recruited and skills, knowledge, attitude and links developed
- SMEs have evaluated web-based modules and provided excellent feedback with suggestions being adopted and the process of re-engineering of materials where necessary has begun
- The 5 partner HEIs have worked impressively in a co-ordinated campaign and there is a willingness to build on this unique regional success.

Economic Development and Community Colleges in San Diego

*Taken from a paper by Augi Gallego, President of the
San Diego Community College District*

Introduction

Regions that seem to be able to sustain economic growth or recover more rapidly from economic slumps are often the same communities that have aggressively developed and continued to strengthen collaborations with business and industry, universities, community colleges, high schools and other key public and private sector entities.

This note presents examples of some of the elements that contribute to community colleges performing a vital role in the economic development of the San Diego area.

Bioscience

San Diego has the third highest concentration of bioscience firms in the US. The Chancellor of the San Diego Community College District serves on the board of directors of the Bioscience Industry Association which in turn works closely with the two-year colleges to develop appropriate curricula and resources to train bioscience technicians. The University of California, San Diego has played the most significant role in attracting and growing bioscience research and development firms into the region. But the community colleges are critical to providing the technicians for R&D and to ensure that the manufacturing of biopharmaceutical products stays in the region.

Support for industry clusters

The California legislature and Governor have supported community colleges in their role in economic development and in 1996 economic development was added as one of the primary missions of California's community colleges. During the fiscal year 2000-01 regional centres of community colleges leveraged \$17 million in competitive state grants to obtain \$67 million (\$23 million coming from business and industry, \$37 million in fees and contracts from industry and \$7 million in federal funding). The centres throughout California provided training and services for more than 86,000 workers, 28,000 students and 15,000 community college faculty and staff.

They have been able to support industry so effectively partly through being embedded in a variety of networks. In San Diego, the following economic development centres exist:

- Biotechnology
- Centers for Applied Competitive Technologies
- Environmental Technology
- Workplace Learning Resource Centre
- Regional Occupational Health Centre
- Advanced Transportation Technology
- Small Business Development Centre
- New Media/Multimedia Centre
- International Trade Development Centre.

The Workplace Learning Resource Centres, for example, specialise in improving employee skills through organisational needs analysis and assessment, customised curriculum development, performance-based training, computer-based training and ongoing support services. Companies that require customised training specific to their employees can contract with the San Diego community college district to design the training, collaborate with the company to develop the curriculum or use curriculum pre-designed by the company. Curriculum developed for contract education programmes like this do not have to go through the sometimes extensive, lengthy process of approvals required for college credit courses and programmes. Equally the regional colleges have developed an online system of curriculum development that has greatly streamlined curriculum development and approval.

Specific initiatives have been developed in partnership with schools and four-year universities to increase maths, engineering and science participation and progression. For example, articulation agreement enables graduates to earn an associate degree in a maths or science field in one year and then transfer to a four-year university, thus accelerating the time to baccalaureate degree for students whose skills are needed in the workforce.

Conclusion

Community colleges in regions with strong research universities that drive economic expansion must work with the universities and new and expanding industries to prepare the technicians that underpin research and development as well as the manufacturing of products. They must offer a strong transfer programmes for future scientists, engineers and business and technical leaders to gain foundations in higher learning that will help them, their companies and their communities to be successful in any economy. State governments help build the network infrastructure community colleges need in order to play a significant role in economic development. It is partly the success of the community college network that has underpinned the economic powerhouse that is California.

A Case Study: IDEC

In February 2002 IDEC Pharmaceuticals Corporation received FDA approval to market a first of its kind cancer treatment drug. While the company was seeking this approval, the community colleges worked with IDEC and the board of directors of the bioscience industry association (BIOCOM) for about a year to plan for the training of up to 650 new employees IDEC would need over the next few years.

The community colleges will provide training for staff in areas such as manufacturing (operations support technicians and operators), quality (environmental quality control specialists), maintenance (calibration technicians and equipment maintenance technicians) and materials control (materials handling technicians).

IDEC, like most of the bioscience firms the colleges work with, recognise the importance of recruiting and retaining a skilled workforce. Built into their plans for expansion is a career ladder for the community college graduates who will work for the company.

Annex C

In the San Diego Community College District, the three colleges have particular strengths in preparing bioscience technicians for the industry. One focuses on preparing technicians for jobs in R&D, another offers a chemistry technician training programme for the industry and a third is a regional bioscience centre that acts as a general resource and has strong programmes in training for manufacturing.

The key to success was working in partnership and within an agreed framework from the earliest stage to build programmes that were specifically tailored to the needs of the company.

Employability Characteristics

CIHE March 2003

What do employers seek in the graduates they recruit?

Employers seek people who can help transform their organisations and add value early in their careers (see the report *Graduates Work* by Prof Lee Harvey). Hence they look for people who have a range of characteristics:

Brainpower; the ability to identify, analyse and solve problems; work with information and handle a mass of data, assess risk, draw conclusions;

Generic Competencies; high level and transferable key skills such as the ability to work with others in a team, communicate and persuade and have interpersonal sensitivity;

Personal Capabilities; the ability and desire to learn for oneself and improve your self awareness and performance, to get started (creativity, decisiveness, initiative) and to get it done (flexibility, adaptability, tolerance to stress);

Subject specific knowledge; depending on the job, but most obvious and necessary in vocational areas;

Technical ability; for example, knowledge and experience of working with relevant modern laboratory equipment;

Business awareness; an appreciation of how businesses operate through having had (preferably relevant) work experience, reflected on those experiences and can articulate the lessons learned so they can be applied in different contexts.

If this range of capabilities is not on offer then the individuals will be less valued.

How can these characteristics and capabilities be developed?

- Through the curriculum and especially through a process of learning that helps transform individuals from being taught to being self-learners who can also problem-solve in teams;
- Through work based learning, APEL and action learning involving partnerships;
- Through extra curricula activities and through quality work experience, provided there has been a process of reflection leading to articulation of the learning developed;
- Through specific advice, mentoring, key skill development and coaching in self-evaluation and presentation (including CVs and interview techniques) by tutors, the careers service and others who guide students; the Progress File has a key role to play in supporting individual learners (and see the DfES report *Work Related Learning*).

We still know too little about how different people learn and about appropriate learning styles. But the process of learning and personal development in the future will be different from in the past, especially as participation is expanded and global e-learning opportunities become more widely available.

Relations with Higher Education

By PricewaterhouseCoopers

PricewaterhouseCoopers

PricewaterhouseCoopers is the world's largest professional services organisation. Drawing on the knowledge and skills of more than 125,000 people in 142 countries, we build relationships by providing services based on quality and integrity.

Graduate Recruitment

We are one of the largest recruiters in the UK, offering graduates a variety of career opportunities including:

- ◆ Assurance & Business Advisory Services
- ◆ Corporate Finance & Recovery
- ◆ Economics practice
- ◆ Tax & Legal Services
- ◆ Actuarial Services
- ◆ Strategy Group

Relations with Higher Education

Building relationships with institutions of higher education is a crucial element of our recruitment strategy, developing greater levels of understanding between both parties, which ultimately helps us achieve our goal of recruiting graduates who have the business-driven qualities we are seeking.

Where these relationships are built

University Careers Advisers

We have extensive links with Careers Advisory Services at universities throughout the UK. We frequently meet with their members of staff to inform them of our current career opportunities and general activities, and we seek their advice on current student trends and student preferences. Many careers services also provide us with introductions to key academics.

Example activities: `

- Annual Careers Staff Briefing: Advisers attend a one-day event, where we not only update them on our current opportunities but also provide an insight into the issues facing our business. The careers advisers themselves drive the agenda, and former topics have included innovation, e-business, entrepreneurship, risk, diversity etc.
- Careers Drop-in Sessions: PwC staff visit careers services to provide students with advice on recruitment issues and finance careers in general. This is very much a careers adviser 'locum' role, which has been extensively emulated by other recruiters.
- Careers Advisers Training Sessions: Through our extensive links with AGCAS we frequently provide key speakers, training and active employer input. At a local level we recently ran a 2-day interviewer training course for careers

advisers in London. This was well received and will be repeated during the summer. We have also provided key input to AGCAS regional training days on, for example, “Marketing the Careers service”.

- Careers Advisory Boards: PwC staff members sit on around 20 CAS boards around the UK, providing an employer’s perspective to the issues discussed.
- Mentoring schemes: PwC alumni act as mentors to current students, e.g. ‘Interface’ for UK ethnic minority students and ‘Interact’ for disabled students.
- Sponsorship: We support a number of university careers service initiatives, where they can be linked to our corporate and graduate recruitment strategies.
- Constant written communications on changes affecting the firm and related opportunities.
- Talks and Skills Sessions: PwC staff members participate in skills sessions and talks which are organised by the Careers Service. We aim to recruit students who not only have outstanding academic ability but also possess strong “employability skills” and we are keen to help them achieve this status. We offer a range of skills sessions which include:

Commercial Awareness	Leadership Negotiation skills	Consultancy Skills Applications & Interviews
Teamwork	Time Management	Mock Interviews & Assessment Centres
Presentation skills		

Participating staff attend a 2-day training course to ensure that they are qualified to run these sessions and are fully in tune with the student environment.

Academic Departments

We recruit students from any discipline and although we are keen to establish links with a diverse range of academic departments, our strongest links are generally with related disciplines.

- PwC lectures which form part of an academic syllabus e.g. Taper Relief Tax at Southampton, Accountancy talks at numerous universities, e-commerce lecture at LSE.
- Employability skills sessions are delivered to numerous departments, many non-related such as the Geography Department at Reading and the Medieval History Department at St Andrews.
- We frequently provide members of staff to provide talks on key business issues of the moment.
- PwC has been asked by a number of universities to contribute to their ‘Subject Reviews’ as part of the HEQAA process.
- Sponsorship of academic prizes at a number of universities.

- **BA (Honours) Business Accounting and Finance at the University of Newcastle-Upon-Tyne**

This innovative and specially designed 4-year degree programme was developed by a partnership between the University of Newcastle-upon-Tyne, the Institute of Chartered Accountants in England and Wales (ICAEW) and PricewaterhouseCoopers. The course offers an integrated programme combining the study of business, accounting and finance with paid work placements at PricewaterhouseCoopers and offers students an accelerated route to the Chartered Accountancy qualification with the ICAEW.

Student-led organisations

- **Sponsorship**

We sponsor a number of sports unions and teams, and cultural and intellectual societies, dependent on the reputation and quality of activity, visibility on campus and the opportunity for PwC staff involvement in activities. Examples at a local level include Edinburgh and London universities' sports unions, coaching initiatives, economics and debating societies, and music societies. Nationally, we are an associate sponsor of the British Universities Sports Association, and take a particular interest in BUSA championship events.

- **Training**

Again, we provide our skills sessions to numerous student associations across the UK. AIESEC and SIS, who we sponsor at a national level, are keen recipients of these events, along with many others at a more local level.

Associations relating to Higher Education and Graduate Recruitment

We are actively involved in numerous bodies/associations relating to higher education. For example, we are involved in a number of initiatives with CRAC (Careers Research & Advisory Centre):

Insight Into Management - we provide facilitators and tutors to these 3-day workshops at various universities, which help students develop the skills employers are seeking. It is also an opportunity for our own people to learn and practice facilitation skills in a safe environment, away from the office.

InsightPlusTM - we were the founder employer of InsightPlusTM when it was first launched. The aim of this programme is to help students realise the learning and value of their part-time/temporary work. We supply mentors to support the students with their programme. This model is now used on the InsightPlusTM Post 16 Programme with school students.

Leonardo Project - European Framework for Work Experience supported by the Commission. We are supporting this European project on an advisory basis. This project has a similar aim to InsightPlusTM but across Europe. The first step is to evaluate/research what employers offer in terms of work experience and then design a framework to help students get the most learning out of work experience and increase their employability.

Calculating your Future – we support this one-day event to highlight Professional Services as a career opportunity.

Examples of other HE bodies with which we have an active involvement include AGR (Association of Graduate Recruiters), AGCAS (Association of Graduate Careers Advisory Services), and FEDORA (an association for those involved in all aspects of student guidance in European HE institutions).

Development programmes offered to undergraduates

PwC undergraduate development programmes provide students with the opportunity to experience the world of work and develop their business knowledge and key skills. Some are paid programmes, allowing students to experience managing their own finances. They provide an opportunity for PwC to develop skills in students who will be potential recruits and include a Gap Year programme, Summer Internships, PwC Experience Days and PwC Open Days.

Leadership, Innovation and Enterprise Studies

The Academy of Enterprise

Summary

Leadership, Innovation and Enterprise Studies (LIES) forms a 12 week, half module of a degree programme. Participants attend for a two-hour workshop per week plus an hours lecture by an external speaker. It is recommended that group consist of no more than 25-30 students for the workshops.

The purpose of the course is to prepare students for the rapidly changing workplace which they are soon to enter.

A number of key topics are explored. These are:

- why enterprise and innovation is essential;
- creative thinking tools and techniques to deal with resistance to new ideas;
- function and working of groups and teams;
- communication, including negotiation, influencing and team working;
- leadership, entrepreneurship and intrapreneurship;
- self-management, goal setting and self assessment;
- problem-solving and decision-making using real life case studies.

The approach adopted is one of practical and open analysis. All issues and topics are examined from a practical perspective. The intention is to encourage the use of creative thoughts. Examples and observation are used to highlight how enterprise and innovation are facilitated by leadership.

Aims, Objectives and Academic Level

The overall objective of the course is to furnish undergraduates with useable knowledge, a range of skills and a creative and enterprising approach that has universal applications. More particularly, students should acquire:

- a range of techniques and skills associated with creativity, innovation and enterprise;
- the ability to recognise creativity in themselves and others. And to see the benefit to commercial and not-for-profit situations;
- the skills needed to communicate effectively, fluently and concisely;
- the confidence to have ideas, to recognise the value of ideas and to make mistakes;
- an enterprising approach to problems and opportunities.
- an opportunity seeking approach to life and the business world.

Teaching and Learning Methods

LIES adopts a creative approach to problem solving and opportunity seeking. This develops in the student an ability to assess and analyse situations and to formulate and articulate responses.

The course has very practical objectives. There is only minimal reading required for the course, students are referred to short relevant texts to gain the appropriate theoretical grounding. Each session contains a varied set of activities within a closely defined structure. There is close interaction between the students and the course tutors.

Students are also exposed to a variety of enterprisers and entrepreneurs who will contribute by drawing on their own practical experiences. Diversity is extremely beneficial to the course as varied experiences may be drawn upon in the collective interest. The aim is to foster group cohesion and encourage teamwork rather than competition.

Students will be involved in the following activities:

- individual and group exercises
- role playing
- problem solving through case studies
- opportunity recognition
- competitiveness training
- business games
- making presentations
- observation and peer review
- field study
- practical exercises
- interviewing individuals

Assessment

The course is examined by a combination of the following:

- a newspaper article
- designing a board game
- a group project to create a business on the internet
- tutor evaluation of class participation, team and individual exercises
- project report and presentation
- participation in a one hour board meeting role play

LIES (Leadership, Innovation and Enterprise Studies)

Application

The LIES course has a broad and inclusive appeal. It's unique approach to problem solving and creative thinking has proved popular across the board from 13-year old school girls to MBA students, from graduate trainees to company managers.

Schools

The Lies programme can be tailored for application in schools. It was piloted at Catford Girls School in South London, in October 2001.

Universities

The LIES course has been run successfully since 1990 at Royal Holloway, University of London, and has formed an integral part of the BA in Business Enterprise (BABE) at the London Metropolitan University since 1999. Dr David Johnson of Durham University and Charles Harvey at the Bristol Business School have both validated the course.

In March 2001 LIES was introduced as a popular module of the MBA course at Buckingham University.

Graduate Training

LIES is run as a week long residential course twice a year for all graduates on the Reed Executive Training Scheme.

Management Training

It is also conducted by Reed Learning at its training centre in London as a two-day intensive management programme. It promotes the course in its brochure, sent quarterly to 500,000 potential clients as ‘a way of thinking, a way of solving problems, ways to stimulate ideas and imaginations that will be relevant to everyone, be they in private commerce, public administration or the voluntary sector.

UK Productivity and Management Practices

A note by McKinsey & Company

While it has long been recognised that UK labour productivity lags that of some other leading economies, with the gap actually widening in recent years, what is much less appreciated is the finding that to quote from the McKinsey report *Reviving UK Manufacturing* (October 2002):

"Foreign-owned companies manufacturing in the UK, drawing from the same pool of talent, working with the same regulatory framework and constrained by the same scale effects as their UK-owned competitors, are more productive than UK-owned companies. Labour in US-owned plants in the UK is up to 90 per cent more productive on average than in comparable British plants". Overall foreign owned plants were nearly 60 per cent more productive on average.

This may suggest that labour productivity has less to do with the quality of the workforce and that in these foreign companies there was systematically better use of world-class management practices. In particular, the researchers observed that the high performing manufacturers deployed three distinctive techniques: lean manufacturing, tightly calibrated performance management and effective talent management. These three techniques are typically interconnected and the average score across all three proved to be the strongest predictor of financial success.

If one has confidence in these findings, then there are a number of interesting policy implications. The following are just two:

- First, it suggests that much closer attention to the patterns of training and management practice within these high-performing companies compared with their domestic owned rivals would be worthwhile. Furthermore, if these practices are indeed superior, then this suggests that they might potentially form the basis for benchmarking work-based learning. Indeed work-based learning might make a far stronger and more direct contribution to raising higher education participation rates in the UK;
- secondly, the research raises questions about the adequacy of business education in the UK. To what extent, for example, are at least some institutions effectively transmitting the insights of best management practice in the areas cited above? Whatever the average starting quality of the workforce, it appears that good management practices can, over time, rectify shortcomings and lead to high performance. This area may be worth examining in more depth.
