

## **EEF Response to Lambert Review**

### **Introduction**

The EEF is pleased to respond to the Lambert Review. We regard raising our game on innovation as being absolutely critical to our future competitiveness. We have contributed extensively both to the Roberts Review on the supply of research scientists and engineers into industry and the work on introducing research and development tax credits.

The UK's shortcomings on innovation were key themes in the EEF's in-depth investigations of the productivity gap with the United States and with Continental Europe. As part of our evidence, we have appended the chapter on innovation from our recently published report comparing UK productivity in manufacturing with that in France and Germany - 'Bridging the continental divide'.

However, much of our input below is drawn from interviews with member companies across the broad spectrum of engineering in terms of activities and in size of the companies. Many of the conversations reported positive experience in terms of the quality of students and of the relationships with higher education and of the benefits gained business. However, the discussions did also reveal huge variations in terms of how well the relationships between business and higher education had worked and were working. Fortunately, they also generated a number of positive suggestions as to how to make collaboration more effective, much of it focusing on ways of promoting better understanding between the two groups in terms of their objectives and methods of working.

#### **1. Business benefits from collaboration**

On almost every type of collaboration identified in the consultation questions, our interviews uncovered contrasting positive and negative experiences. This varied not so much from University to University but often between sub-departments. We therefore focus on the areas of collaboration most commonly identified by business as being beneficial.

Before going into specifics, one general point is that Regional Development Agencies and Business Links were rarely involved in facilitating these relationships. This was partly because employers tended to rely on their network of personal contacts including universities with whom they had current or past relationships, past colleagues or teachers within universities and, less frequently, other employers. This was not necessarily a criticism of the government institutions, though some companies did suggest that they felt these institutions were not sufficiently informed on issues such as recent developments within University departments and potential collaboration partners. One company quoted an example of the local Business Link being unable to go any further than giving them the name of someone in the University's marketing department.

More importantly, the reality is that no single organisation is sufficiently equipped to provide business with the up to date specialist information it requires to identify potential collaboration partners. Some companies that had used official research

ratings of university departments did not find them useful either because they turned out to be out of date or shed little light on how well different university departments were geared up to working with business. This suggests that more attention should be focused on encouraging more information sharing between employers either through networking meetings or through on-line information sources to which they could contribute.

We look below the areas of collaboration that attracted most interest in our discussions.

- **Continuing development of staff** was a growing area of interaction between Universities and companies. Linked with this, a number of companies commented on the benefits they had gained from using universities to expose staff to new thinking. One commented on a positive experience of using university people to facilitate board meetings. Companies are keen to benefit from the expertise of staff from Higher Education, and their role as an “involved but impartial” participant in business processes is one which can be developed.
- **Student placements.** In general these were seen as useful both in terms of the work conducted by the students and also to aid recruitment. The periods that students spent in companies were useful both in assessing potential talent but also in providing students with a positive view of what working in industry involved. However, some companies did feel that the students and universities taking part in initiatives such as the Teaching Company Scheme or Year in Industry gained significantly more than the companies themselves. In general there was a preference for older students, particularly those undertaking PhDs, as they required less supervision. Some firms believed that longer placement of say two years, with the students working for them during holiday periods, were required to get anything out of the relationship.
- **Access to specialised equipment** was a major benefit for smaller and medium-sized companies unable to afford it. Some companies pointed to the benefits of joint purchasing with the university and other firms of such equipment.
- **Development projects.** Possibly reflecting the composition of EEF membership towards medium-sized firms, the majority of these projects were focused on solving problems and making incremental improvements, though Blue Skies work was also important. Working with Universities enabled many companies to undertake projects which simply would not have been possible given their resource constraints.

Several positive comments were made about the more practical approach taken by universities in the UK than in the US. On balance, firms also felt that universities had become better at understanding the needs of industry and were less likely to look down on it as ‘oily rag’ as they had in the past. However, as we outline below, there was a huge variation in the quality of the relationship, particularly in the area of project management.

## 2. Strengthening relationships

Though our interviews threw up many positive experiences, it was clear that the quantity and quality of the interaction between industry and university could be increased substantially if a number of key issues were addressed. The variability of experiences is also worrying. It is true to say that many areas of business such as hiring staff, undertaking advertising or hiring consultants will have its share of successes and failures. However, the impact of failure in research and development projects, particularly for smaller firms, is often substantially greater and it is therefore vital to reduce the risks of this happening.

What was refreshing was the acceptance by industry that the problems encountered either by themselves or by other firms often related to mistakes in their own approaches. In many cases, firms had learnt lessons the hard way and were able to pinpoint the critical ingredients for successful relationships with universities.

We list below some of the barriers identified by companies to effective collaboration. Many of these comments apply both to the overall relationship but also to the specific issues of technology transfer and intellectual property rights. We also highlight some specific comments on the latter.

- **Companies do not network sufficiently.** This is a long standing problem that was confirmed by the research conducted by the EEF in comparing UK manufacturing productivity with France and Germany. It found that the level of networking amongst higher amongst firms in France and Germany, particularly the latter where a range of mechanisms existed to encourage this at the regional and local level. This means that companies are missing out on opportunities to collaborate with each other on research projects and in sharing information on potential research partners in universities and their own experiences. Some companies commented that mechanisms such as industrial liaison committees did exist but they met too infrequently and were too poorly attended to be useful.
- **Some firms find it hard to know what's on offer.** This comment applies more to smaller and medium-sized companies who tend to have fewer connections and are more time-pressed. For them, the legwork of identifying potential collaboration partners is a major diversion of management time that could have focused on more productive activities. Others worried that the lack of information meant that there were missing out on opportunities. Perhaps there is a role here for the Manufacturing Advisory Service, who are working extensively with small and medium-sized companies in helping them improve competitiveness and productivity.
- **Relationships critical.** Almost every company commented on the importance of the quality of the relationship[s] between individuals in companies and in universities. These were seen as critical to developing a good understanding of each other's objectives and ways of working and to sustaining project during difficult times such as downturns in a company's fortunes. This is perhaps inevitable but in some cases meant that relationships collapsed or deteriorated significantly when a key person moved on to another job.

- **Uneven quality amongst University people.** Related to the above point was the widespread perception that the quality amongst senior university staff such as heads of department was very uneven. This particularly related to their understanding of industry's objectives and of the importance of keeping to timescales, their ability to manage projects and to tap into funding bodies. Though there were examples of excellent management of the relationship, other companies pointed to basic failings such as shortcomings in communicating information electronically.
- **Department heads can be blockages.** Some companies commented on the fact that department heads could significantly slow progress both at the start of projects and at other critical times by insisting that all communications was routed through them.
- **Need to improve mutual understanding.** When highlighting instances of collaboration that had worked well, companies use phrases like 'speaking the same language' and 'the university people felt like an extension of us'. The most common criticisms by industry related to late delivery of work, poor communication and lack of understanding of the importance to the company of the project on which they were collaborating. However, firms also pointed to the fact that companies often contributed to this problem by failing to understand that universities had different priorities from them. This led to the following problems:
  - underestimating the effort that the company needs to put into managing the process;
  - failure to set out clear objectives for the project;
  - insufficient communication to universities of the consequences for businesses of late project delivery;
  - unrealistic deadlines that failed to reflect that universities had other commitments that prevented from responding rapidly to requests for help;
  - inadequate planning for student downtime periods such as exams and preparation for exams.
  - lack of awareness of implications for total project costs of university overhead costs.
- **Unrealistic objectives.** Some interviewees commented on the fact that companies could have unrealistic objectives of what they would get from the relationship by looking for them to generate new ideas rather than working with companies to build on their existing ideas.
- **Intellectual property.** Mirroring comments made elsewhere in this response, companies suggested that some of the problems with intellectual property rights (IPRs) are caused by failure to agree clearly the terms of reference from the start of the project. Other companies encountered no problems with their consistent line that all IPRs resided with themselves as the firm originating and financing the research. However, there was a widespread perception that universities had increasingly unrealistic expectations of their share of the pie. In particular, the comments suggested that universities were underestimating the challenges of commercialising and overestimating their ability to do it. To some extent, the stance taken by universities was understandable given the

pressure on them to look for alternative sources of finance. However, amongst the problems it caused was a deterioration in the quality of the relationship with more bureaucratic delays and a less open and sometimes slightly adversarial approach.

However, the overall tone of the discussions on this issue was far from negative. Some firms suggested that the relationship can be very much a win-win one with companies gaining access to new ideas while helping universities to gain access to finance through their connections.

- **Strengthening relationships.** The interviews yielded a number of recommendations for improving the quantity and quality of collaboration between businesses and universities. The key suggestions were as follows:
  - Improved information that reduced the reliance on personal networks and helped to draw in companies that presently had limited knowledge of the opportunities available. This might take the form of a widely publicised website to which employers could contribute information on their own experiences of collaboration and current research projects and capabilities of universities.
  - Employer-led introductions to collaboration. There was a general feeling that the most effective way to introduce firms to potential partners and to educate them in working with universities was through their peers rather than government organisations such as Business Links or RDAs, though the latter could still play an important role in providing information. One route could be the annual supplier conferences run by large companies where universities could be introduced to other potential partners. Local-level organisations such as the EEF and Chambers of Commerce could also provide a neutral territory for companies to meet potential partners. More importantly, they should run programmes where companies could share experiences and provide information to their peers of how to effectively work with universities.
  - The development of more genuine business innovation centres, run by industrial liaison officers with previous industry experience and knowledge of funding bodies.
  - The EPSRC Fellows scheme to support research only posts should be extended. We would also endorse a program to fast-track more industry researchers to academic posts with teaching in universities to allow greater exchange of knowledge and techniques.
  - It is important that both participants in the relationship recognise the value of entering each other's "worlds". No relationship should be based solely on "business into academia" or "academia into business" – the communication and benefits should flow both ways.

### **3. Attracting and retaining skilled staff**

The EEF has responded to a number of reviews on the supply of skilled graduates and post-graduates into industry. The interviews conducted for this review reinforced the points that we have previously made on this issue, particularly those to the Roberts Review on the supply of research scientists and engineers into industry. However, our discussion revealed a high level of satisfaction with the skills of the students that they had recruited, had used for specific projects or to whom they had provided work

experience opportunities. This related both to their technical skills and also their personal skills such as understanding of business processes, communication, analytical and problem-solving, project management, negotiation and teamworking . The latter has become such a buzzword in recent years that its importance is often underestimated. In many cases, new recruits will from day one find themselves working in a number of teams that are varied in terms of age, skills and background and for a large number of managers over the course of a year. Though companies accepted that, in many cases, new recruits would not be the finished product, there was a general view that universities were producing science and engineering graduates with much better developed personal skills than in the past. One company actually went as far as to suggest that they were concerned that there had been an over-emphasis on personal skills at the expense of the technical content of courses.

To some extent, the sample of companies that we interviewed may be biased in that they were more active in the innovation field and better placed to attract the best graduates and postgraduates. However, even these companies faced some problems in recruiting and retaining good quality product and design engineers and, particularly in Scotland, electrical and electronics graduates.

Individually and collectively, businesses have a variety of communicating their skill needs to universities. For example, larger engineering companies form partnerships with universities to input into the design of courses. Despite these examples of good practice, there is however a lack of overall co-ordination between companies and higher education.

Looking collectively, within the engineering sector, the key player in this dialogue is the Sector Skill Council for Science, Engineering and Manufacturing (SEMTA). It publishes a variety of research reports such as labour market surveys and Skills Foresight, as well as contributing to skills dialogues undertaken by the DfES and the Institute for Employment Studies. The employer focus of all the new SSCs provides all parties with an opportunity to develop routes of communication.

The EEF and SEMTA meet regularly with DfES officials and ministers, and recent meetings have covered the future of Higher Education from an employer perspective. We will be submitting a response to the Higher Education white paper at the end of April, in which we will be emphasising the need for flexibility in HE provision, better links between local employers and universities, and support for the work-based route to Higher Education.

Though there are clearly ways that career paths could be improved, we would contend that much of the problem with recruitment relates to the image of engineering and manufacturing. This is an issue for individual employers, employers' organisations, schools and universities and government. Our interviews provided many examples of how the variety of ways in which students were exposed to the reality of working in industry positively shaped their perception. These comments also applied to university department that undertook joint projects with companies. Our experience with the Year in Industry scheme shows that young people who have undertaken a well-structured, rewarding business placement in engineering are far more likely to return to the industry once they have finished their engineering / technology degree. A common concern for engineering is that large numbers of engineering graduates do not choose to enter the sector after graduation, preferring to take up offer from other companies who value the skills and attitudes of engineering graduates, such as

numeracy and problem-solving. The value of work experience in helping young people decide on a suitable and challenging career path cannot be understated. However, guaranteeing a quality experience is highly resource intensive for the company and the institution, and needs a great deal of commitment and support.

Similarly, the careers advice and guidance offered to students in universities must reflect the realities of working in a particular career or sector, and must be impartial, accurate, and up-to-date. Careers advisers should be involved in the building of links with business, ensuring that students have access to the best possible information.

The development of Higher Education as proposed in the current white paper could potentially contribute to improved links between business and academia, as the Foundation Degree and work-based learning route to HE becomes more common. As more students from diverse backgrounds, studying in more flexible ways, enter HE, we hope that they will help institutions and staff improve their understanding of the world of business and current working practices.

#### **4. Financing arrangements**

The companies that we interviewed generally had positive experience of grant funding such as that available from the Engineering and Physical Science Research Council (EPSRC), though this contrasted strongly with European funding which was seen as cumbersome. Companies did, however, provide examples where funding mechanism for grant approval had been inhibiting when they had needed to respond very quickly to competitive or marketplace pressures for R&D. Delays in accessing funding had prevented projects from getting off to a prompt start.

In some cases, there was also frustration that universities were not sufficiently geared up to handle applications for grant funding and that firms themselves were left to handle the administration. These concerns related both to perceptions of the lack of understanding in some universities of the funding options available and to their failure to process applications sufficiently quickly.

Through its contacts with its membership, the EEF has come across many examples of companies benefiting from the greater affordability of research projects resulting from the introduction of R&D tax credits. However, as international experience shows, the impact of such credits tends to take several years to build, while the current difficult and uncertain economic climate has certainly constrained the expansion of expenditure on R&D. However, there are also other issues to address. Our interviews uncovered examples of companies active in innovation, who were unaware of the tax credit. In addition, as the government itself has acknowledged, there is scope to widen the definition of research and development for tax purposes to make more inclusive of the range of development activity undertaken by engineering firms.