

An effective practice in preparing students for workplace

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Abstract: *The requirements of industry change and all employment sectors and career areas are subject to these changes. Therefore, students need to learn to cope with the uncertainty that goes with their future career. In addition the needs of industry and university engineering degree programmes do not always align. It is also difficult for some companies to engage with the university sector, to enter into a planned conversation about their current and future skill requirements. Research conducted by the authors investigates how linking students with employers throughout their degree study closes the employer-university gap and better prepares students for the workplace. It collects evidence from sponsored and placement undergraduate engineering students within the Engineering Faculty at Loughborough University. The research employs both qualitative and quantitative methods to collect and analyse data in order to identify professional skills development in the students and how a long term relationship between students and employers impacts on this. The results also present the views of the employers on their relationship with both the students and the university, together with their perception on how this link enables industry input into the curriculum. Conclusions are drawn on the benefits that long-term links between students and employers offer.*

Introduction

Over the coming years, the importance of technical and professional skills will increase and industry will need a highly skilled workforce to succeed in the new global economy. In fact, “*in today’s fast changing world we can be a winner in the “race to the top”, but only if we run fast*” (Lord Sainsbury, 2007). This is true for both the public and private sectors of any size. They need engineers who are professionals and leaders of world-class standing and can perform in a complex business environment to guide the industry to a successful future. This highlights the role of engineers in society and developing a successful economy (BIS, 2009; Leitch, 2006; Robinson et al., 2007).

Degree programmes should provide graduates with technical knowledge and equip them with the vocational skills that will make them attractive to employers. Involving industry in the education of the students is seen as a priority which enhances students’ learning and would improve the attractiveness and relevance of the course to both students and employers. In recent years, there has been considerable development across the United Kingdom in the relationship between higher education and industry. Research collaboration, consultancy services and industry’s growing involvement as an interactive user of all types of teaching and training are parts of these linkages. However, there is still a need for greater interaction between employers in particular industrial sectors and the relevant faculties in universities (DfES, 2003; Roberts, 2002; and Howells, 1998).

Engineering, probably more than any other scientific discipline, has a long practice of collaboration between academia and industry. After students, industry is engineering departments’ main client and universities must express their importance to industry. Successful relationships have wide rewards to both parties in addition to the benefits generated for economy from technology transfer (the Royal Academy of Engineering, 2007). For industry input to be successful, all parties have to benefit and the practice has to be sustainable. There are three stakeholders in this input: student, academic and industrial practitioner. This paper reviews some of the successful models of practice used in the Faculty of Engineering at Loughborough University over a number of years.

The sponsored programmes at Loughborough University

Loughborough University has always had strong links with industry (Higher Education Academy Engineering Subject Centre, 2009). Working closely with industry (in both teaching and research areas) are embedded in the University's strategic plans and all undergraduate engineering programmes offer students an optional twelve month industry placement (sandwich year) in conjunction with many leading engineering companies.

Also, a significant number of the undergraduate students are sponsored by industry. In the Department of Civil and Building Engineering a consortium of companies is involved in developing the curriculum and sponsoring students on the MEng Civil Engineering, BSc Construction Engineering Management (CEM), and BSc Commercial Management and Quantity Surveying (CMQS).

The consortium sponsors both the degree programmes and the students on the programmes. These programmes have been developed in direct response to a range of needs of industry. The sponsors play an active role in the development of the curriculum and delivery of the courses (Dickens, 2006).

Through sponsorship, the sponsors provide students with a bursary, maintain contact with them during their studies, and provide vacation work and sandwich placements. In general, graduate employment follows but this is not guaranteed, or always wanted by graduates. However, there is a general expectation on both sides that permanent employment will follow graduation.

There are annual meetings with consortium companies to discuss issues relating to the programmes including student progress and new applicants. Identifying programme content, providing teaching material from current projects, and providing guest speakers are some of the other inputs to the curriculum.

The authors have conducted a three year research project on the impact of sponsorship on students, academics and industry, and some of the results are reported below.

Methodology

This research uses a mixed-methods design, in which both qualitative and quantitative methods are employed to collect and analyse data. The results potentially enable the researchers to answer a broad range of research questions such as students' experiences and achievements from being/not being sponsored and the correlation of sponsorship and students' employability.

The research captured existing practice across degree programmes within the Department of Civil and Building Engineering at Loughborough University. Data was collected from the stakeholders involved in the sponsorship schemes, using printed and online format questionnaires, together with structured and unstructured interviews. A six-point rating scale was used in measuring and analysing responses. This scale gives more efficient discrimination between positive or negative views of students rather than neutral views (Brown, 2006). In addition to the quantitative data, respondents were asked to add qualitative statements in response to open ended questions.

Summary of findings

This section reports the analysis of a subset of the data obtained between March 2007 and October 2009 from the parties involved, as well as the relevant literature reviewed. 13 groups of undergraduate students were surveyed, at different at different stages of their studies, from the Department of Civil and Building Engineering at Loughborough University. 464 questionnaires were sent out and 60% (277) of them were completed. Seven interviews were carried out with senior academic staff across the Faculty of Engineering in Loughborough University. Twenty three senior managers in major companies within the construction industry took part in this research by attending interviews and completing questionnaires.

What are the benefits derived from sponsorship by the stakeholders?

All the parties involved in the schemes were independently surveyed and asked to identify the benefits of sponsorship for themselves, as well as the benefits to the other groups. The perceptions of each group can be summarised in Table 1.

	Students' perception	Academia' perception	Employers' perception
Students' benefits	Industrial experience Future job Extra funding	Industrial experience Professional skills Future job	Industrial experience Professional skills Extra funding
Academia' benefits	Job opportunity for graduates Link to industry Enhanced reputation	Attracting more students Job/training opportunity for graduates Link to industry	Enhanced marketing Link to industry Support from industry
Employers' benefits	Enhanced recruitment Access to talented students Enhanced reputation	Access to talented students Enhanced reputation Enhanced recruitment	Enhanced recruitment Access to talented students Enhanced reputation

Table 1: The benefits of sponsorship from three different perceptions

As the results show the parties agreed that sponsorship has a positive impact on them. There is considerable homogeneity overall in the views of the parties taking part and their views are in line with each others. They all agreed that the sponsorship schemes are a step forward to increase the quality and quantity of engineering graduates.

Sponsorship gives students direct access to industry and an opportunity to apply work in a real world context. These factors could have an important effect on students' employability, as the majority of companies see industrial experience as an important discriminator in selecting job applicants for interview.

It is also providing an appreciation of real world issues, an introduction to professional working protocols, a better understanding of their course materials and gives the students a chance to see if the chosen career/employment is a good fit for them. One student stated:

'I probably learned more of relevance during my sandwich year than my whole academic years.'
Adding: 'it [sponsorship] offers extra support and the industrial placements are real experience of what working as a civil engineer involves. Even if you were not keen on the type of company (a contractor) as I was, at least I knew that consulting was what I wanted to do.'

Sponsorship also adds significant value to the Department in marketing and improving the quality of their programmes, as well as funding further activities. It increases the university's relationship with companies which helps to identify gaps in graduates' skills and provides better information on industry trends and factors influencing the employers.

The employers stated that sponsorship is a stable recruitment resource for high quality graduates and the sponsorship schemes signify a real commitment to the alignment of the courses' content to the needs of industry.

The relationship between employers and students and academics

Industry can, through sponsored programmes, establish active and long-term relationships with university engineering departments in the area of education. 89% of the companies agreed that sponsoring students during undergraduate studies will give employers the opportunity to be involved in teaching and training of the students and make sure they are a good standard before employing them. Also, maintaining a close relationship with both the university and the students will increase the companies' reputation in the society.

The research participants were asked on a scale of 1 to 6 (1 = very poor, 6 = very good) how they ranked their relationship with the sponsored students. They rated their relationship with students as good (78%) or very good (22%). They emphasised that a clear understanding of the expectations of both parties from the outset of the sponsorship about what they are both required to do is essential. It is important for students to know what they expect to gain and what companies expect them to do and know the level of responsibility.

The employers also ranked their relationship with the academics as good (67%) or very good (33%) and they stated that it depends on the willingness of individuals to maintain and improve the relationship. One interviewee suggested:

'better understanding of how and why industry recruits would benefit academia in developing their links with industry.'

All the sponsoring companies believe their link with the university and students is a mutually beneficial relationship which works well and the reality of sponsorship meets their expectations. Therefore, they intend to continue their relations with the university.

Sponsorship support of employability skills

A study by Spinks, et al. (2006) revealed that lack of communication, team-working, and interpersonal skills are graduate weaknesses. They have technical and theoretical knowledge, but they are not professionals.

The employers and the academic staff, who took part in this research, agreed that continuing links between students and employers give the students better understanding of their future career as an engineer and better knowledge of the commercial implication of engineering decisions. It also makes them more productive and makes a significant contribution to developing their professional skills such as communication and team-working skills.

One of the employers said:

‘What we are looking for is not someone who gets 85% on the exam paper. The ability to work and communicate with other people is what we are looking for. They [graduates] cannot manage people or put a report together or go to meetings. Sponsorship schemes provide them the opportunity to learn these skills in the company over the years.’

In order to identify what the employers expect from new graduates, the participants were asked to rank on a scale of 1-6 (1 = Not important, 6 = Very important) how important each of the following is in offering job to a candidate:

- team working;
- communication skills;
- academic performance;
- professional skills;
- and motivation.

Figure 1 presents the results and Figure 2 shows the students’ perception of how sponsorship contributes to the development of some of their programmes’ learning outcomes linked to employability skills.

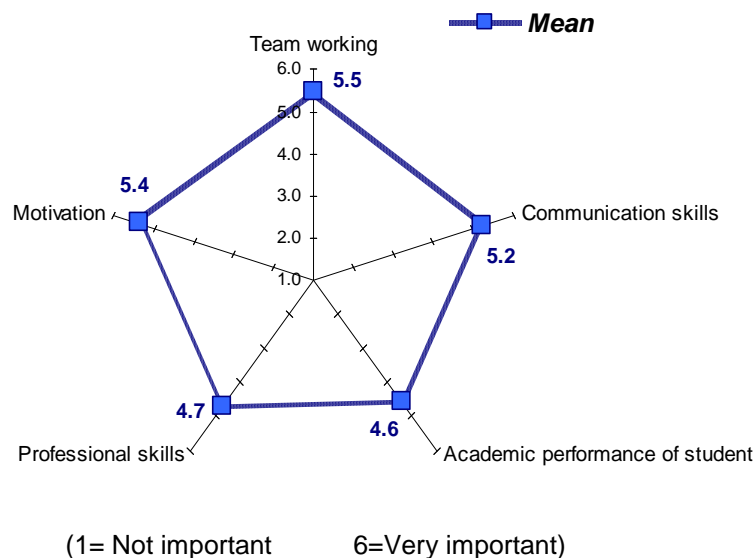


Figure 1: The importance of different factors affecting employers' decision in offering a job (Mean)

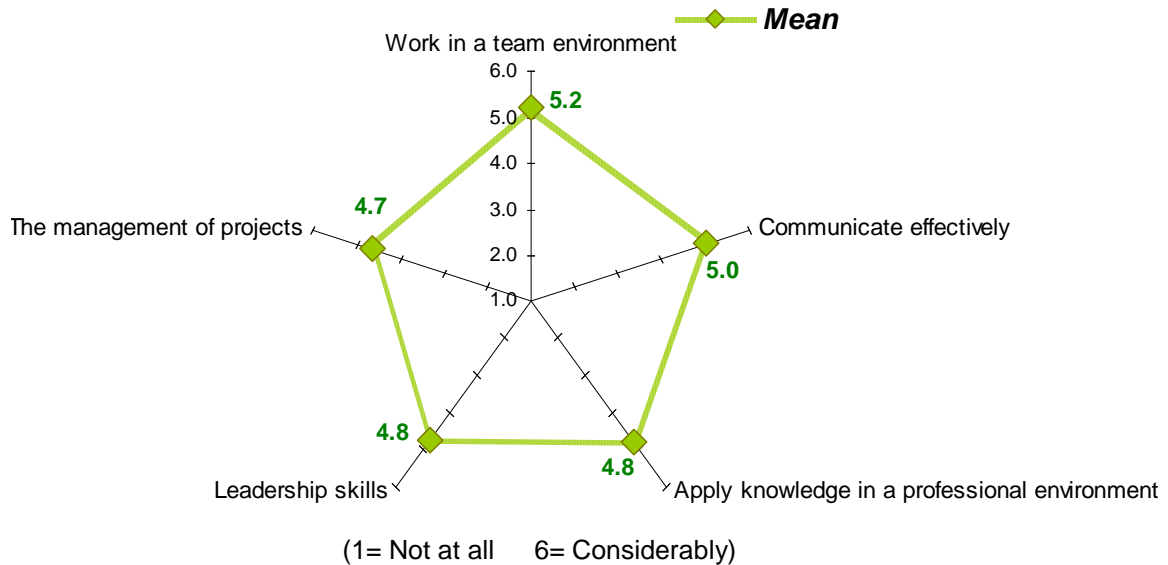


Figure 2: Students' perception of sponsorship support of selected learning outcomes (Mean)

The results show sponsorship has a positive effect on all major skills such as team-working, communication and other professional skills, as sought by employers. This conclusion is supported by our survey's results regarding the students' employability, which showed that 75% of the final year sponsored students had received a permanent job offer, compared with 41% of the non-sponsored final year students. It should be noted that majority of students, including non-sponsored students, do a placement during their studies; therefore, this result would suggest that sponsorship has a positive effect on students' employability compared with placement programmes. The employability rate of the sponsored students could have a considerable impact on the attractiveness to future students to apply for sponsorship and the sponsored programmes.

Sponsorship vs. Placement

Linking students with employers during their degree study is an ideal way to build up a strong range of skills. This "link" could be in the form of a 3-12 month placement, a vacation job or four years of sponsorship support. However, the longer term relationship gives more responsibility to students and a longer period of time to learn and contribute positively to their sponsoring companies (Foley, 2004; Little and Harvey, 2006).

The results from the students show that those students who were not in the sponsorship scheme, but a majority of them had been on a 12 months placement, stated that the sponsorship programmes are beneficial and all of them recommended the scheme to other students.

Also, the results illustrate that companies who sponsor students for a longer period are more likely to benefit from sponsorship than the companies who just sponsor students for one year or less. They stated that it usually takes time to supervise and train students and only long term relationships let the sponsors recover the cost of supervision and training.

Another distinctive advantage of sponsorship schemes for students is receiving financial support from sponsors during their study period. It could help paying their debts and afford related activities and equipment to enhance their study. One student said:

'the financial support has made all the difference. I imagine these days with £3000 top up fees it will mean a lot more in the future. Since all decent University Civil Engineering degrees are 4 years now, for students who are financially constrained doing Civil Engineering is £3000+ more expensive than many other degrees and the sponsorship scheme could really help with this.'

Conclusions

The students, academic staff and industry experts contributing to this study all agreed that sponsorship adds value to the education of undergraduate engineering students, and it is beneficial for all parties and helps prepare students for their future careers.

Sponsorship schemes provide the opportunities for employers to be involved in the teaching and training of students, inform universities of their skill requirements and influence the curriculum. The sponsored courses are more aligned to the needs of industry, which improves the student's employability. The high profile direct links with industry also have a positive impact on the department's ability to attract good quality applicants to their degree programmes.

Sponsorship provides continuous training and learning throughout the degree studies over the four/five years which can help the students learn how to cope with the uncertainty that goes with the changes in all employment sectors. Sponsorship is a longer term relationship which gives more opportunities to the students to integrate relative practical experience with theories. It also provides them with financial support.

Future work

Further longitudinal and cross section studies should be carried out to include a larger survey sample including other universities, other engineering disciplines, and industry sectors over a larger timescale. Further evaluation of sponsorship schemes is needed to highlight the benefits which arise from this type of University-Employer link and to increase awareness of the values of sponsoring students and undergraduate programmes.

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