“Moving closer” – maximising benefits to university courses, students and employers through undergraduate civil engineering placements

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Abstract

This project built on research from university and employer perspectives exploring relationships between expectations of employers, professional bodies, students and universities on what constitutes a good work placement. Qualitative information on good practice was gathered in order to identify areas for improving placement practice and to illuminate employer engagement processes. Impact and benefits of different approaches to placements and curricula and/or staff Continuing Professional Development (CPD) implications were identified, together with recommendations on how improvements in understanding are shared and disseminated among employer groups and universities. Findings included that although there were already guidelines on placement practice from a number of bodies, good practice identified at a wide range of points seemed more the result of academic staff drawing on their own experience, formed in the light of good knowledge of professional institution requirements, rather than use of guidelines. Employers mentioned professional institution requirements almost as a matter of course. That guidelines are not used as intended by those that produce them may be a general tendency, but this project’s guidelines specifically reflect the organised voice of employers thanks to the involvement of their senior groupings, Sector Skills Councils and similar, in addition to individual employers. This project’s guidelines are also more up to date than others identified, including particular issues affecting provision of placements that may face universities over the next few years. Students seem to recognise the benefits of placements more in retrospect than in advance. Some universities seem more flexible than others, adapting provision of placements as economic and other conditions have changed and to meet the needs of employers and placements. As one employer put it, “employers gravitate towards universities that make it easier”. Employers also want to see academic credit awarded for placement learning and understandable processes with which they can help in support of this. The guidelines will be made available through a number of channels identified in the evaluation section.

Keywords: universities-employers’ views, students’ work experience, placements, employability, guidelines, communication, civil engineering, built environment

Background

Despite recognition that good industrial placements should be integrated within degree courses (The Royal Academy of Engineering, 2010; CBI/UUK, 2009) and responsibility shared between universities and industry in placement provision (The Royal Academy of Engineering, 2010), a survey conducted in 2010 by a United Kingdom Contractors Group (UKCG) University Task Group made up of leading construction contractors, while unpublished, reflected serious concerns,
including that communication on placements with some universities was ‘limited’, ‘minimal’ or ‘virtually nothing’. What universities had to say about these contentions or what might happen because of them was not known. Industry representatives were also concerned that universities’ interest in work experience may have declined along with provision of placements themselves. Despite evidence of a general downward trend in the propensity of undergraduate courses across subjects to feature placements, a survey in spring 2010 by the Association of Civil Engineering Departments (ACED) showed that 86% of civil engineering courses were offering placements, indicating existing volume (at least theoretically, as this offer would be optional in some cases). The project’s investigation was based primarily on qualitative research with the main aim of producing up to date guidelines affirming the expectations of employers and those who take responsibility for conduct of placements within higher education.

Rationale

The project originally arose from the realisation that it is beyond doubt that good industrial placements should be integrated within degree courses (The Royal Academy of Engineering, 2010). The 2010 UKCG survey clearly indicated that placements were seen by major construction contractors (who employ many civil engineers) as crucially important to graduate employability and that the understanding between universities and employers needed to substantially improve if a better outcome was to be achieved. A later review conducted for the Construction Industry Training Board (CITB)-ConstructionSkills (Galloway, 2011), revealed that employers were still fairly negative about universities’ conduct of and support for placements, and that it was increasingly likely that a graduate with no work experience would have little chance of gaining employment in a cognate area. It was then reported in January 2012 that ‘a third of this year’s graduate vacancies are expected to be filled by applicants who have already worked for the organisation during their degree course’ and that ‘new graduates who have not had any work experience at all during their time at university have little hope of landing a well-paid job with a leading employer, irrespective of the academic results they achieve or the university they have attended’ (High Fliers Research, 2012). Finally, when the project was first mooted, it was felt that it may become even more important to enhance understanding between employers and universities about work experience, given straitened resources likely to impact on the propensity of courses to offer and run placements as financial and related changes affect the way in which universities operate. The direction of central thinking on the value of work experience to developing employability seemed to be confirmed in February 2012 by the report of Professor Sir Tim Wilson’s review of business/university collaboration following summer 2011’s higher education white paper for England. The Wilson report contends that university culture, strategy and course portfolios offer more likely explanations for the decrease in year-long placements than any of the perceived barriers identified by previous research into their decline (Wilson, 2012). Wilson also made recommendations specific to work experience, one of which was that the Higher Education Funding Council for England (HEFCE) should establish a mechanism whereby universities are incentivised to expand “sandwich” programmes through changes to Student Number Controls that it operates. Of course, this is only a recommendation, but it seems feasible that it could be adopted to incentivise substantial (as suggested by the term “sandwich”) placements, given that government is apparently pleased with what it sees to be the effects of other changes to the use of Student Number Controls and that HEFCE was closely involved with the Wilson review.

The approach

The project’s initial review drew on a wide ranging exercise which underpinned the work of the Built Environment Skills Alliance (BESA, https://sites.google.com/site/besaukalliance/) Higher Education Strategy Delivery Group. Other sources fed in, for example professional institution information was explored and there was substantial examination of existing placement guidelines.
Most of the relevant Sector Skills Councils (SSCs) knew of the project because BESA representatives were involved from the point of proposal forward, as was the chair of the relevant UKCG committee. Both were updated through BESA Higher Education Strategy Delivery Group arrangements. The project also ensured links to developments in engineering outside of the built environment, for example with the SSC STEM Cluster which related to all of engineering. This grouping ceased, but communication was maintained through the member of Cogent SSC’s staff who had previously coordinated the Cluster. The project secured three of its employer participants through existing relationships. CITB-ConstructionSkills helped in locating smaller firms for potential involvement. The project set out to work with four employer-university partnerships with active civil engineering placements involving students from the university concerned, in which it was successful. The partnership sample reflected a great range of variables which could impact on how employers and universities operate as placement partners, and the views of both sides. The first field work actions were to devise and carry out telephone interviews with employers. Apart from the case of the University of Bradford, once it was established which university the employer thought appropriate to approach and the relevant name and contact details were obtained, the university side was contacted, the project explained and cooperation sought. Table 1 sets out the partnerships, exemplifying unique contributions from each of the four companies and particular perspectives provided by the universities involved. Web links to information on the four companies are included in this case study’s Further reading section.

Table 1. Employer-university partnerships

<table>
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<tr>
<th>Company</th>
<th>Unique contribution</th>
<th>University</th>
<th>Perspective</th>
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<tbody>
<tr>
<td>MWH</td>
<td>Global, operating on six continents; water infrastructure and transportation infrastructure; construction engineering and mining services</td>
<td>Bradford</td>
<td>Diploma in Industrial Studies to help relate placement learning to degree</td>
</tr>
<tr>
<td>Delta Engineering</td>
<td>Smaller firm, employing 40 staff; specialised; own fleet of fully automated machines; installs underground pipelines and services tunnels etc.; particular focus on safety</td>
<td>Plymouth</td>
<td>Largest marine science and engineering school in Europe</td>
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<tr>
<td>BAM Nuttall</td>
<td>Major multifunctional construction contractor; 45 undergraduate placements in 2011; employs Graduate Recruitment Officer whose role overarches placements, relating to staff involved and students (including progress, behaviour and wellbeing)</td>
<td>Surrey</td>
<td>Long standing employer consortium amongst arrangements for placements; strong focus on professional objectives</td>
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Qualitative methodologies were used to increase understanding. These centred on in-depth interviews with the employer-university partnerships. The interviews were guided by a protocol developed by the research team. It was intended that each partnership’s employer and university respondents would be interviewed together, resulting in four interviews. In the event, mainly because of respondents’ other commitments, six interviews were undertaken with four respondents being seen separately from their partner organisation. In addition, face-to-face interviews were carried out with University of Bradford School of Engineering, Design and Technology (EDT) students. Eight had undertaken a placement year, five had the option but elected not to do so and seven were currently on placement. The first eight University of Bradford students were interviewed before the conversations with employer-university partnerships took place. These information-gathering exercises with students were intended primarily as a baseline for comparison following the pilot of the draft guidelines for the University of Bradford’s live placement provision. This did not take place due to an unexpected event which affected the project’s operations and communications, delaying the draft guidelines. However, in addition to there being plans for future testing in hand, these guidelines are not meant to impact placement performance merely through the student. They aim to supportively inform improvement of employer-university communication on placements, fostering a context in which students are enabled to perform well when on work experience and are thus surer of maximising the benefits of their placement, both short and long-term.

It was not possible to pilot the guidelines within live placements, so information was brought in by alternative means. For example, additional employer views were gathered from the University of Bradford’s Civil Engineering Industrial Advisory Board and at an Employers’ Fair organised by Bradford’s School of EDT. The project findings were also presented at a showcase and included in a staff briefing and Project Directory produced for wider dissemination by the HE STEM Office, all at the University of Bradford. The guidelines were fully reviewed by the Institution of Civil Engineers (ICE), the most immediately relevant professional institution (and other Joint Board of Moderators (JBM) professional institutions) and by the Construction Industry Council (CIC), which works across the majority of professional institutions operating in built environment subjects. The Chair of Bradford’s Civil Engineering Industrial Advisory Board, a senior academic who was not otherwise involved with the project, also commented. The guidelines were examined by a leading member of the relevant UKCG committee who also chaired the final seminar. At this seminar, having received presentations which included the project’s processes and key findings and with the main points of the guidelines available, a wide range of attending stakeholders considered areas organised by four different discussion topics which related their conversations to the project’s objectives. This led to the production of a number of “Big Ideas”, crystallising potentially significant additions, most of which were included in the guidelines.
The project’s investigative and review activities produced extensive outcomes which fed into the formation of short case studies which university and employer partnership respondents reviewed for accuracy and coverage. While the delay in finalising the guidelines made it impossible to fully pilot them within the University of Bradford’s placement provision during the project’s timescale, the project’s main outputs were otherwise achieved. Additional review measures were put in place, with plans for further development of the guidelines, again within the University of Bradford. The guidelines are available on this link: http://www.hestem.ac.uk/resources/guidelines-moving-closer

**Evaluation**

Though guidelines for placement practice exist, it seemed that academic staff drew primarily on their own experience, formed in most cases in the light of good knowledge of professional institution requirements. Employers mentioned professional institution requirements almost as a matter of course, but not the use of placement guidelines such as those identified by the project.

Good practice was identified at a wide range of points of the placement process, from initially working with employers through matching student with placement opportunity, establishing and upholding a meaningful placement learning programme, development of generic employability and specific occupational skills, identifying opportunities for and then securing evidence of learning and achievement, visits and what happens in them, supporting first steps towards professional qualification and tying off and learning from placements. Potentially transferable points about universities working with smaller firms were also uncovered - and much more.

Some universities seem to have adapted placement provision as economic and other relevant conditions have changed. They also appear more likely to flex to employer requirements, for example by rearranging modules to cover in advance what will be required of students on placement and particularise to specific employers’ requirements, individual placements and professional institution objectives. Furthermore, these universities tend to have staff development strategies aimed at improving academics’ placement practice. Universities are also using technologies which facilitate reporting for student, university and employer; in one case this reporting is fortnightly. Factors like these could place universities well should the profile of substantial work experience as part of undergraduate courses rise. As one employer succinctly put it “employers gravitate toward universities that make it easier”.

Student respondents were unanimous in their support of the placement year. Of the students who did not take a placement year, most acknowledged in hindsight that a learning opportunity had been missed. The students currently on placement were particularly appreciative of their work experience. Students seem to appreciate the benefits of placements more in retrospect than in advance and it can take a while after placement for students to form a balanced picture (six months seems about right). These perceptions seem highly valuable, particularly in terms of encouraging and guiding students who are considering or about to go on placement. These views may also be a welcome contribution to a university’s public information.

The award of academic credit for placement students’ achievements seems a sticky subject for many in higher education, but the case for genuinely new thinking in forming processes to support this could be strengthening. Employers definitely want to see academic credit awarded for placement learning, and understandable processes with which they can help in support of this.

The guidelines will be made available through the following:

**Higher education**: ACED; Council of Heads of Built Environment; Association of Colleges (AoC, higher education in further education, via AoC nominee, BESA Higher Education Strategy Delivery Group); Higher Education Academy Discipline Lead for Construction and Built Environment (replacement function for Construction and Built Environment Subject
Centre); Engineering Professors Council; HEFCE (by sending to the relevant Associate Director)

**Employers:** UKCG; individual employers (e.g. representatives on BESA Higher Education Strategy Delivery Group, those selected by Sector Skills Councils (SSCs) to receive the guidelines, those contributing to the project), SSCs and similar (CITB-ConstructionSkills including Construction Industry Council (CIC) as partner in CITB-ConstructionSkills, Engineering and Utility Skills, Cogent, Engineering Construction Industry Training Board (ECITB), Proskills, SummitSkills, Asset Skills)

**Professional institutions:** ICE; Institution of Structural Engineers; Institution of Highways and Transportation; Institution of Highway Engineers and Chartered Institute of Building; JBM; CIC in its role relating to the majority of professional institutions operating in built environment subjects.

**Discussion, summary**

The guidelines differ from others examined by the project in a number of respects. Other guidelines did not seem to reflect the employer viewpoint to the same extent or take changes to higher education funding into account, possibly because they were composed some time ago. This project’s guidelines are up to date and ready to help universities meet particular challenges that may arise over the next few years. However, it was obvious that although the academics interviewed were outstanding placement practitioners, they were not necessarily drawing on any guidelines but relying mainly on their own extensive experience. That guidelines are not used as intended by those that produce them may be a general tendency, but this project’s guidelines are connected, perhaps more influentially than others, to the organised voice of employers, particularly through the link to UKCG, and also to SSCs and similar. Another difference between the formation of these guidelines and others is that this project’s team may have featured a greater amount of expertise in work-based learning and assessment outside as well as inside higher education. This may have enabled identification of seemingly new points relating to work-based assessment.

Possible examples include universities asking employers for incidences with potential for students to produce evidence of prized abilities, such as demonstration of capacity to evaluate profitability of possible jobs, handling of logistics procedures and demonstration of safe practice – something which is also a key commercial aspect. Another point related to students being enabled to identify and secure critical pieces of evidence of achievement and then form a realistic picture, at a reasonably early stage of their placement, of what they could gain overall from the experience that would help them in establishing their professional career. Reference was also made to a possible disjuncture between what is achieved by the student on placement and during their degree studies. Vagueness about what party was responsible for aspects of students’ assessment while on placement was one indicator of this. Employers were particularly keen to do away with any possible disjuncture and have a strong, direct relationship between placement and academic learning, with the feeling that award of academic credit was the right way forward.
Further development
Because it was not possible to pilot the draft guidelines within the project’s timescale, plans are in hand to do so within the University of Bradford’s live placement provision and further develop the guidelines. Information acquired by the project on impact and benefits derived from different approaches to placements, the implications for curricula and/or staff CPD and the correlation with professional institution requirements will form the basis of pilot implementation within the University of Bradford during the next academic year. This should help the guidelines to be more useful, including transferability to engineering disciplines other than civil engineering.

References


Higher Fliers Research Ltd (2012) New research shows Britain’s top employers are set to recruit more graduates this year, but warns that a record number of jobs will be filled by graduates with work experience [online], http://www.highfliers.co.uk/download/GMRelease12.pdf (Accessed 6 April 2012).


Further reading


Institution of Civil Engineers (n.d.) Gaining work experience [online], http://www.ice.org.uk/Education/Teachers---Careers-Advisors/Gaining-Work-Experience (Accessed 6 April 2012).

Quality Assurance Agency (2006) *Code of practice for the assurance of academic quality and standards in higher education: Section 7, Programme design, approval, monitoring and review* [online],

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