



## Furthering Links with Industry: Diploma in Industrial Studies (DIS) Website

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# Introduction

The main aim underpinning the activities carried out by engCETL is to build on Loughborough University's long-standing experience of working with industry, so as to provide its students with the learning experiences they need in order to become highly employable graduates. This case study illustrates how a development project undertaken by engCETL, in association with its departmental and other university partners, succeeded in furthering the links with industry for the benefit of its stakeholders, especially students, in relation to their 'sandwich year' placements.

## Context

Two thirds of engineering-related undergraduate students at Loughborough University take the opportunity to undertake a twelve-month industrial placement experience, or 'sandwich year', which is usually between the second and third year of their degree course. These industrial placements are fully integrated into the students' programmes of study as a supported period of work-based learning. They are formally assessed leading to a Diploma in Industrial Studies (DIS), which is offered as a supplementary award to a student's degree. There is a module specification for each DIS module, which details the Intended Learning Outcomes, Assessment Methods and Content. The assessment schemes and intended outcomes vary between departments, so the information below is 'typical' of what might be included.

To qualify for the award of a DIS, students must satisfactorily complete:

- A minimum of 45 weeks of Professional Training with a company, by completing a series of learning experiences aimed at broadening their awareness of their degree subject in a commercial context.
- A formal Record of Training to be maintained during the placement, and to be assessed as required by their Academic Tutor.
- A Technical Report to be completed on some aspect of the work undertaken during the period of training, to be assessed by a Company Manager and the Academic Tutor.
- An Oral Presentation at the workplace on some technical or commercial aspect of the training received, which is formally assessed.
- A competent performance of duties given by the company providing the placement, to be assessed by a Company Manager.
- An honours degree programme.

The companies offering industrial placements are asked to provide a series of experiences of work relevant to the student's degree subject (including industrial organisation, purchasing and management), which require a level of intellectual participation, that is appropriate to a third year undergraduate student. They are also asked to provide:

- A suitably qualified Company Manager (e.g. a chartered engineer) to act as the student's Industrial Supervisor.
- A stimulating working environment in which the student will have an opportunity to develop their personal and employability skills.
- The facilities to enable the student to give an oral presentation at the end of the placement.

In return, the participating university departments provide:

- An Academic Tutor for each student to support all aspects of the training during the placement period.
- Guidance on the implementation and assessment of the professional training received by the students.
- If necessary, a member of the relevant professional body to act as a mentor to the student in building up their record of training.

## Problems

Prior to this development project, the complex DIS system described above was predominantly paper-based, and as such was very labour-intensive to manage and implement. The problem from an administrative perspective was summed up by a member of the University's Careers' Service as follows: *"Previously all information has been in paper format and each student, visiting academic and employer required a pack of information, which was a drain on administrative resources"*. It should be noted that this problem was replicated across each of the departments participating in the DIS scheme, and that all of the departments in the Engineering Faculty have large numbers of staff, students and industrial partners.

The problem was exacerbated by the administrative staff having to constantly update the information available on such matters as placement opportunities, and the need to keep all of the participants in the scheme – students, academics and employers – fully informed about the latest developments as and when they occurred. One of the difficulties associated with communicating such information was that at any one time the people who needed access to it could be in one of many different locations – at home, in the department, elsewhere on campus, on site, or away on placements.

In line with Higher Education and institutional policy decisions, it was also recognised that there was a need to use industrial placements as an opportunity to encourage students to engage in personal development planning (PDP) by creating and maintaining a record of their professional training. As part of the DIS regulations, students were required to maintain a *Record of Training*, and a generic electronic tool called the RAPID Progress File<sup>1</sup> had already been developed at the university by means of an externally funded (HEFCE) project, which was available for the students to use. However, it was thought that what was needed was a customised version of RAPID Progress File – an e-tool that would be more attractive to, and readily usable by, engineering students. Ideally, when such a version of RAPID became available it would be possible for students to access it directly via the same website designed for use in connection with their industrial placements.

In March 2004, in an attempt to address these problems, Dr Kaddour Bouazza-Marouf of the Wolfson School of Mechanical & Manufacturing Engineering, submitted a development project proposal to the then Engineering Education Centre (EEC).

## Project aims

The main aim of the resultant project was to develop an industrial placement website, which would provide a single stop information portal for use by all of the key stakeholders - students, administrators, academic staff and employers. It was envisaged that when created, such a site would enable all of the participants in the DIS scheme at any time and wherever they were located to:

- Access the latest up-to-date information on all aspects of the industrial placement scheme including programme specific details, assessment requirements, vacancies, company data, careers and Professional Institution membership.
- View, and if necessary, download relevant forms, guidance documents and schedules.
- Complete and where possible return online, forms relating to such matters as company vacancies and successful applications.

It was maintained that through the provision of such a web-based resource, the costs associated with the administration of the industrial placement scheme would be reduced in the participating departments, and that it would enable the processes and procedures associated with the DIS scheme to be implemented more efficiently and effectively for the benefit of students, academic staff and industrial partners.

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<sup>1</sup> <http://rapidprojects.lboro.ac.uk/rapid2k.html>

In addition, the intention was that the website would provide a portal through which students could, if they wished, create and maintain an electronic record of their professional training, as required for the DIS award, and in line with the Quality Assurance Agency's (QAA) recommendation that students should be offered the opportunity to engage in personal development planning (PDP). In order to achieve this aim it would be necessary to create a customised version of the RAPID Progress File. It was thought that students could then use the resultant 'Engskills' online PDP tool to create a comprehensive professional development resource, which would be of relevance to students both during and after their time at the university.

## Key dates

Spring 2004	Project proposal submitted to and approved by EEC
Summer 2004	Work on DIS website initiated
2004-05	DIS website piloted in Wolfson School of Mechanical & Manufacturing Engineering
2006-07	Use of DIS website transferred to five other departments

## Project actions

The major piece of work to be undertaken by this project was the development of a DIS website, which was written in a format that would enable designated users to update its content. When the work was initiated in 2004, it was estimated that as much as 95% of intended academic-related content of the website already existed in paper format – but the incorporation of that material into the website required close collaboration between engCETL's progression officer and learning technologists and the relevant departmental academic and administrative staff. In particular, the training provided by engCETL equipped the administrative staff with the web editing skills needed if they were to update the contents of the website. This input from engCETL has enabled the departments to take ownership of their parts of the site, and in so doing has made its maintenance easier and more sustainable. The resultant website was developed with an input from the Wolfson School of Mechanical & Manufacturing Engineering, where it was piloted, before being transferred to five other departments.

The organisational structures and procedures created by engCETL in association with its departmental and other university partners, which enabled it to collaborate in the creation, piloting and dissemination of the DIS website, also made it possible for it to play an important role in relation to the development of an 'Engskills' version of the RAPID Progress File. Regular meetings of its senior staff and a group of academics seconded on a part-time basis from their departments, provide a forum in which a wide range of matters relating to teaching and learning are discussed, methods for improving practice are disseminated, and arrangements for future collaboration are brokered. Overlapping membership of the management committees of Loughborough's externally funded projects and the Higher Education Academy Engineering Subject Centre (EngSC) extend the university's learning and teaching network and enhance the quality of the resultant interactions. It was through exchanges within this 'community of practice' (Lave and Wenger, 1991; Wenger, 1998) that connections were made between what might otherwise have been seen as disparate activities – work on the DIS website and developments relating to the customizing of the RAPID Progress File.

The formal and informal interactions, which occurred between the participants in this network, provided an effective means by which information and ideas for improving practice could be disseminated and engagement of academics and their departments with engCETL were furthered.

## Outcomes and impact

The DIS website<sup>2</sup> provides ample evidence of the positive outcomes of the project activities outlined above. Prior to the placement, Loughborough engineering students can access details about the scheme, guidance on applying for UK and overseas placements, and the latest information on company job vacancies. During the placement itself students can access (and if necessary download) forms and guidance documents relating to all aspects of their department's DIS scheme ranging from health and safety through to writing the final report. The site's home page, which is addressed mainly to student users, also directs them to keep a record of the skills they develop – a process they will be expected to maintain throughout their careers. They are advised that this will help them with future job applications, obtaining charter status after graduating, and with their personal development planning. To that end it provides them with links to the 'Engskills' version of the RAPID progress file designed and developed especially for that purpose. Student users can also access learning resources under three headings: key skills, mathematics, and IT. Those relating to key skills provide guidance on the development of generic study skills (e.g. 'Reading Efficiently') as well as support for aspects of professional training they might need during their DIS placement such as 'Technical Report Writing', 'Making Oral Presentations', and 'Time Management'.

According to one of the administrative staff from a department using the website: *"The site is now the main resource for information going out to students from the placement office. This means that the information is more likely to be picked up by users, can be updated very quickly and has produced significant timesaving for the placement staff"*. In terms of its impact on students, a member of the University's Careers Service summed it up as follows: *"Students are now much more aware of the placement process and what is expected of them. They are now more likely to produce the correct documentation on time, and the quality of their PDP recording is more effective"*.

The DIS website also provides academic staff from six departments with a one stop information portal, which enables them to access all of the data, forms, schedules and guidance documents they need to facilitate the effective implementation of the DIS placement scheme from their perspective. From an administrative point of view, the cumulative effect of this is a substantial saving of time (and materials) previously devoted to the production of large information packs and their distribution to academic staff and industrial partners as well as to students. The claim made in the original project proposal (2004) that a DIS website would *"add value"* through the *"professional image projected to companies, easy reference for users, ease of updating and minimising photocopying leading to time and cost savings"* has also been substantiated.

## Discussion

The development activities which have resulted in the DIS website (through which access can be gained to the 'Engskills' version of the RAPID Progress File) represents much more than the creation of a 'one-stop-shop information portal' as advocated by the New Engineering Foundation in its report on work-based learning (2007 pp11). Important as this is in terms of the efficiency with which the whole industrial placement system can now be managed on a 'just-in-time' basis along with the image it projects, the real significance lies in the way in which the DIS is underpinned by principles of effective practice, which have been developed and refined over time through the collective experiences of those implementing the scheme.

The DIS website is in effect, the articulation of a 'code of practice', the main purpose of which is to enhance the quality of the students' learning experiences and to assure the standards of the academic credits they are awarded. As such it bears many similarities with the Quality Assurance Agency's code for work-based learning (QAA, 2007), which identifies a set of precepts accompanied by detailed guidance on the arrangements needed to assure the quality of work placement learning. In so doing it outlines: the general principles

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<sup>2</sup> <https://engskills.lboro.ac.uk/dis.htm>

underpinning placement learning; HEI policies and procedures; placement providers (especially the role of HEIs in ensuring that employers understand their responsibilities); student responsibilities and rights; student support and information; staff development of those who are involved in placement learning; dealing with complaints; and the monitoring and evaluation of placement learning opportunities.

However, the arrangements for placement learning as set out in the DIS website should not be seen in any way as being a prescription for bureaucracy, but as a 'social contract' between different stakeholders with shared commitment to continually improving the effectiveness of the scheme. It is also a tacit recognition of the fact that students embarking on an industrial placement are entering an environment that is different from that of HE with which they are familiar. Scott (2001) summed up the challenge facing students in this situation as follows: "*However similar the two learning environments are, new skills are required and new knowledge has to be developed to allow us to function in this new environment*" (pp31). He goes on to identify two particular causes of difficulty i.e. the need for the newcomer to learn "*new ways of communicating and working*", and how the "*formal and informal hierarchies of the workplace work and in what ways*" (pp31). He concludes that in such a situation "*learning is likely to operate informally, though the new place of work may have arranged a formal induction programme*" (pp41). This suggests that the students may well find the experience to be what is referred to in recent literature on teaching and learning in Higher Education as "*troublesome knowledge*" – an idea derived from 'threshold concept theory' (Perkins, 1999; Meyer and Land, 2003 and 2005; Land, Meyer and Smith, 2008). In turn this highlights the value of the support that students receive from various sources, such as the resources they can access from the DIS website, the help they receive from their Academic Tutors, Industrial Supervisors and workplace mentors in making sense of the situation in which they find themselves and negotiating the transition from being a 'student' to being an 'employee'.

Even with these various forms of support in place, De Jong and Versloot (1994) remind us that the student on a DIS placement is likely to experience one of the recurrent dilemmas in work based learning i.e. the conflict which has to be resolved between the "*short-term priority of the work and the long-term priority of learning*". By this they mean that there are times when getting the work done has to take precedence over the student's on-the-job training – when they may well be expected to adopt a role of "*legitimate peripheral participation*" (Lave and Wenger, op cit; Wenger, op cit) whilst more experienced colleagues deal with immediate contingencies. Marsick and Watkins (1990) have warned that it is easy for such unplanned opportunities for learning to be overlooked by the student – as it is with the lessons that could be derived from the tacit, taken-for-granted routines of busy workplaces. This highlights the importance of the mechanisms and procedures, which have been put in place as part of the DIS scheme, to enable placement students to recognise and learn from these opportunities. Formal and informal interactions with supervisors and workplace coaches and mentors (and online discussion with their peers) have important roles to play in furthering that learning – as well as being an induction into some of the processes associated with continuing professional development (CPD).

At the heart of this form of experiential learning (Kolb, 1984) is the idea of personal development planning – that learning experiences are to be planned and reflected upon along with experiences derived from the unplanned contingencies of the workplace. Depending on how well it is maintained, and the extent to which it used as a tool to further reflection, the student's DIS 'Record of Training' may have an important role to fulfill in this respect. However, the 'Engskills' version of the RAPID Progress File was developed with a view to providing the students with an electronic tool they could use for the purposes of their personal development planning – a tool they could use at the university, during their industrial placements and after they have graduated as part of their CPD. The feedback would suggest that, thus far, the take-up of that opportunity by students in relation to their DIS placements has been modest – perhaps because they had not already developed the habit of using it as if it was "*as natural a part of the course as lectures, tutorials and lab classes*" (Barker, 2004). That said however, there are mechanisms in place such as the record of training, the technical report and the oral presentation designed to help students to reflect on their learning experiences, and in so doing consolidate and deepen their knowledge and understanding of what they have learned from their industrial placements (Brockbank and McGill, 1999; Moon, 2004).

## Conclusions

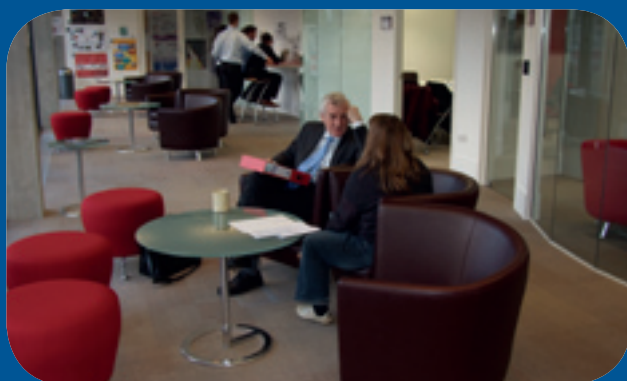
This engCETL development project has succeeded in developing a much-used website, which now serves as a highly effective 'one-stop shop' information portal for students and staff with regard to aspects of Loughborough University's DIS placement scheme. It has enabled substantial savings to be made in the costs incurred by departments implementing the scheme, and the web training provided for their administrative staff has ensured that its on-going maintenance is sustainable by them. The parallel development of an Engskills version of the RAPID Progress File was achieved according to plan – though to date its uptake for use by students in connection with their industrial placements appears to have been modest. The DIS scheme as manifest in the resultant website is an articulation of a code of practice developed over time through the experiences of its key stakeholders, and aimed at enhancing the quality of the students' learning experiences, whilst at the same time assuring the standards of the award they achieve.

## Future updates

The Wolfson School placement website (<http://www.mmdis.lboro.ac.uk>) that was originally developed by engCETL has proved to be an excellent way of providing information to students and visiting tutors. Based upon users' experiences since its development engCETL staff time has been allocated for further enhancement; this will involve upgrading the website to increase functionality and interactivity for both staff and student users and to provide long-term sustainability through the University's Virtual Learning Environment (VLE), Learn.

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