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Using part-time students to improve the student experience

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Abstract

The development of students and graduates in engineering and construction-related disciplines benefits from the inclusion of practical experience, skills and competencies within their studies and early professional training. Providing this experience through industrial sandwich placements and part-time study has long been a key element of undergraduate courses but it is difficult to achieve with full-time students.

The Department of Built Environment within the Faculty of Engineering and Computing at Coventry University benefits from having 40% of its students undertaking part-time study whilst working in the civil engineering and construction-related industries. This student profile has a clear impact on the nature and delivery of the courses but there is scope to use the knowledge and experience of the work-based students to further enhance the full-time student experience.

This paper describes how work-based part-time undergraduate students can support and enhance the full-time student experience and how their industry knowledge and experience is formally recognised by the use of Contact with Practice credits. The benefits for both the full-time and part-time students will be presented together with the mechanism adopted for awarding credit. The paper will also describe how this industry focus is part of a Faculty initiative to further develop professional skills.

The Department of Built Environment at Coventry University

The Department of Built Environment offers courses in a wide range of construction-related disciplines including the following undergraduate degrees:

Building and Construction courses

Architectural Design Technology BSc
Building Services Engineering BSc
Building Surveying BSc
Construction Management BSc

Civil Engineering CEng/Eng courses

Civil Engineering M/BEng/BSc
Civil and Structural Engineering/Civil Engineering Design BEng
Civil Engineering and Management/Civil Engineering Construction BEng

There are currently 480 students enrolled on these degree programmes studying on either a full-time or part-time basis with a relatively small number on sandwich courses with a year placement in industry. The Student Profile is shown in figure 1.

Built Environment Student Profile

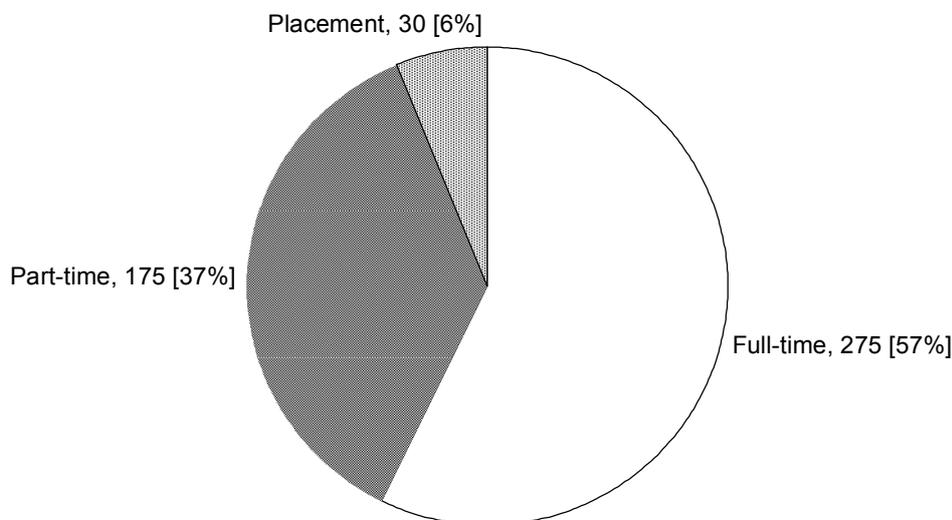


Figure 1 Undergraduate student profile for Built Environment, Coventry University

The provision of a part-time study mode has long been a feature of civil engineering courses at Coventry (in 2007-8 42% of the civil engineering students were studying on a part-time basis). To facilitate the requirements for a day-release scheme the modules for each level of the course were timetabled on just 2 days a week so that a part-time student took 2 years to complete each level of the full-time course. Changes to the modular structure from eight 15-credit to six 20 credit modules in 2006-7 has enabled the length of the part-time course to be reduced (see figure 2). Although the number of part-time students starting at level 1 has increased (from none prior to 2004-5 to 16% of the total number of part-time students in 2007-8) the majority of part-time students start at level 2 having previously achieved a HNC in Civil Engineering at Coventry University or an FE college.

The number of part-time students on Building and Construction courses has traditionally been significantly less than for civil engineering but this trend has begun to change: in 2007-8 34% of the building and construction degree students were studying part-time (all 10 students on the new Building Services Engineering degree are part-time) and therefore the structure of the degree outlined in figure 2, and the resulting timetable constraints, has been adopted across the department.

Full-time	Year 1	Year 2	Industrial placement	Year 3	
Academic Level	LEVEL 1	LEVEL 2	Industrial placement	LEVEL 3	
Part-time	Year 1	Year 2	Year 3	Year 4	Year 5

Figure 2 Full-time and part-time study modes (industrial placement for sandwich courses)

The performance of part-time students

A recent study of part-time students at Coventry University (Davies, 2008) has compared the academic performance of part-time and full-time students. It was found that for four academic years between 2002 and 2006, part-time students outperformed full-time students in terms of grade of honours and average marks in modules (6.4 percentage marks on average in each module). The core of the study was a series of interviews with three graduates (individually) and 21 students (in groups). The responses confirmed the sacrifices and challenges encountered in part-time study, but also clearly revealed the advantages of gaining professional and academic experience in parallel, and the value to a part-time student of the skills, attitudes, and motivation developed in the workplace. It was clear that many part-time students found that their academic performance and motivation were enhanced by the links they were able to make between the course material and their experience of its practical application within the industry.

It is easy to see that full-time students have something to learn from part-time students – at the very least some knowledge of what it is like to work in civil engineering. Unfortunately, genuine interaction between the two groups at Coventry is limited. This is partly because of the structure of the course, with part-time and full-time students moving through the course at different rates and therefore never being in the same cohort for long. In the study (Davies, 2008), the interviewees identified strongly with other part-time students but generally had very little relationship with full-time students. In principle, mixed groups of part-time and full-time students would be possible, in design projects for example, but it was evident from the interviews that this would be unpopular with the part-time students if it were imposed.

Anecdotally, the benefits of the workplace are also evident in the attitude and academic performance of final year students returning from an industrial placement but unfortunately this is a small proportion of the student body.

Development of the Contact with Practice (CP) credits scheme

For the award of an honours degree, the Coventry University regulations require students to gain 120 credits at each academic level of study. 110 credits are earned via the mandatory or option modules that form part of the degree programmes. Full-time students gain the extra 10 credits from the University's scheme of Add+vantage modules designed to improve student employability and career development skills (Coventry University, 2008). In Built Environment, part-time students gain the extra credits they need in the form of CP credits.

The initial driver for the development of the CP scheme was simply to overcome the shortfall in credits that part-time students in built environment would have by not taking modules from the Add+vantage scheme. The aims of the Add+vantage scheme are laudable and it was believed that part-time students had clearly demonstrated their employability skills by being employed in the construction industry. All that was needed was a formal mechanism for assessing and certificating their APEL (Accreditation of Prior Experiential Learning) credit that could be applied across the department with transparency and equality. Traditional mechanisms of certificating APEL involve the submission of a report or portfolio by the student (Cox and Green, 2001) but although this would have had benefitted the

part-time student the authors saw additional benefits and potential benefits to other parties if an alternative mechanism were employed.

Other potential benefits were identified as:

- Exposure to the workplace that enhances the skills and performance of part-time students
- Raising the awareness of full-time students to the work opportunities available in civil engineering
- Giving full-time students opportunities to make contact with potential employers
- Integrating professional training into the early stages of a student engineer's education.

This last benefit was seen as fundamental in “selling” the attractiveness of the scheme to the part-time students since the majority of the benefits were clearly for the full-time students. The part-time students' involvement in the CP scheme supports the attainment of development objectives for the Institution of Civil Engineers (ICE). These development objectives form the basis for the Initial Professional Development of graduate civil engineers working towards professional membership of the ICE and are based on the EC^{UK} threshold standards of competence and commitment (2003).

Although primarily aimed at graduate engineers working towards CEng/IEng status the ICE suggests “students are encouraged to start working towards achievement of their development objectives during their academic studies and particularly during vacation or placement experience in industry.” (ICE3005, n.d.: 3) This experience could be achieved at the end of the academic level 1 study at the earliest but more usually at the end of level 2.

The CP credits scheme contributes to the following ICE Development Objectives:

- **Develop people to meet changing technical and managerial needs**
Objectives and work plans. Lead by example. Support others' individual training and development.
- **Communicate with others at all levels**
Presentations. Exchanges of information. Advice to technical and non-technical colleagues.
- **Demonstrate personal and social skills**
Awareness of the needs and concerns of others. Develop good working relationships to achieve collective goals. Set an example for others to follow.
- **Comply with relevant codes of conduct**
Promotion of the Construction Industry
- **Manage your own continuing professional development, and assist others**
Review your own development needs

These objectives demonstrate the softer skills required in engineering and the socially responsible attitude that the profession seeks to engender in engineers.

The Contact with Practice (CP) credits scheme

There are three objectives to the scheme:

1. To provide a basis for awarding credit to part-time students in place of Add+vantage modules.
2. To enable part-time students to undertake self-reflection and personal development aspects of Continuing Professional Development (CPD).
3. To create a mechanism for allowing full-time students to benefit from the industry knowledge and contacts possessed by part-time students.

To earn CP credits, part-time built environment degree students arrange an event or experience that will allow them to review and reflect on their own work experience and benefit others by giving them a flavour of the construction industry – a contact with practice.

For organising one event or experience part-time students are awarded as many CP credits as they need to take the place of Add+vantage modules for the whole of their degree (i.e. up to 30 credits). These credits are awarded in recognition of the contact with practice that the part-time student benefits from through practical experience and the proof of this, demonstrated by making the contact with practice for full-time students. The event is normally organised by the student during either their level 2 or 2/3 part-time year of study.

Each part-time student submits a brief summary of their industry experience and a statement describing the type of event or experience they wish to offer. This proposal is reviewed and approved by an academic member of staff in consultation with the student where necessary.

The suggested forms of event or experience are:

- A workplace visit - most probably a construction site or design office - for 10 students. A site visit would be led by the part-time student, and a design office visit would include some form of presentation of a project or projects by the host part-time student.
- A formal spoken presentation (15 minutes) plus a poster on a relevant project that the part-time student has had a significant involvement with. The presentation would be given during the part-time student's attendance day and the poster displayed on the ground floor of the John Laing Building.
- Creation of an on-line presentation on a relevant project or projects that the part-time student has had a significant involvement with.

Once approved the student then plans and implements their proposal (i.e. advertises the event, leads the visit, gives the presentation etc.). They make all necessary workplace arrangements, including health and safety induction and employer's authorisation. It is expected that it may be appropriate for a member of staff to assist with making transport arrangements for visits and dates/rooms for presentations.

The mechanism for advertising the events is via a discussion group in the department programme web in CUOnline (a WebCT Vista VLE). The part-time student posts a blog entry describing their event (see figure 3). For an on-line presentation the student has the option of including the web link or attaching the presentation to their post. For workplace visits students sign-up by commenting on the blog with their contact details. By default, places are limited to 10 but the first 12 are accepted in case of drop-outs. After the event the students are invited to give feedback and rate the event so that the organiser and future event organisers can benefit from the experience. This feedback mechanism is available to all events.

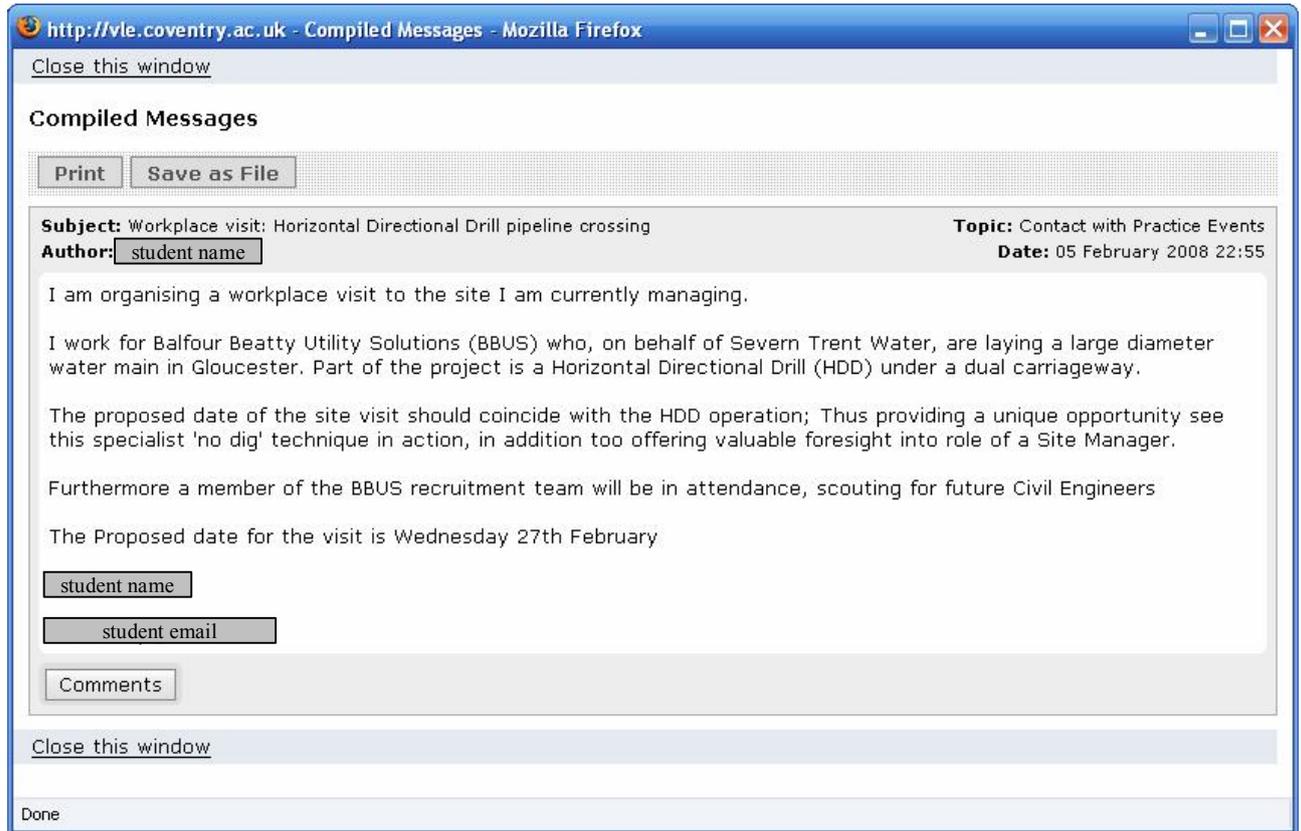


Figure 3 A Contact with Practice event description posted by a part-time student

Initial assessment of the CP scheme and feedback from part-time students

23 part-time civil engineering students were initially introduced to the scheme in 2007-08. 2 students were given APL credit for previous units studied with the Open University that were deemed to be in accordance with the aim of the Add+vantage or CP schemes and had not been used as qualifications for entry to the degree course. The remaining 21 have all submitted proposals for events for the 2007-8 academic session. Of these 5 organised a workplace visit, 13 proposed an on-line presentation and the remaining 3 proposed a presentation with a preference for on-line. The range of projects was very wide: highway, bridge and building design, water treatment, flood prevention schemes, tunnelling, inspection of historic structures using rope-access techniques.

Informal face-to-face feedback was obtained from students following the initial briefing on the scheme and what was required. The feedback was almost universally positive. The organisation of the event or experience was seen as a constructive method of achieving the credits required and was preferable to having to compile a portfolio of evidence or write an experience report to certificate the APEL credits. Many, but not all students, were pleasantly surprised that they could also use this scheme to contribute towards their ICE training and development objectives. Some students commented that their employers would welcome a visit by students given the current recruitment problem faced by the industry. This view was reinforced by other students once they had explained the detail of the scheme to their employers.

The first set of workplace visits will take place in February – March 2008. Feedback will be obtained and an assessment made of the effectiveness and value of the scheme to the students who took part and the views of other interested parties such as employers will also be sought. This initial feedback will be presented at the EE2008 conference.

Future development of the CP scheme

The operation and assessment of the scheme has been awarded an internal Learning Teaching and Assessment project grant by the Faculty of Engineering and Computing that will enable an assessment and development of the scheme to be done over the next 2 years.

In 2007 the Faculty of Engineering and Computing at Coventry University started a fundamental review of its pedagogical approach to teaching. Looking to draw upon best practice in engineering education and incorporate features into future infrastructure developments it formed the term Activity Led Learning: in which the activity is the focal point of the learning experience and the tutor acts as a facilitator. An activity is defined as a problem, project, scenario, case-study, research question or similar in a classroom, work-based, laboratory-based or other appropriate setting and for which a range of solutions or responses are appropriate. Activity Led Learning requires a self-directed inquiry or research-like process in which the individual learner, or team of learners, seek and apply relevant knowledge, skilful practices, understanding and resources (personal and physical) relevant to the activity domain to achieve appropriate learning outcome(s) or intention(s). To be appropriate, the learning outcomes or intentions must be consistent with the aims, outcomes and intentions of the programme of study with which the student is engaged.

One suggested development of the CP scheme is that it be more closely integrated with existing academic modules and embrace the principles of Activity Led Learning in order to extend the benefits of the CP scheme by enabling the event or experience to form the basis of an Activity Led Learning process for the students involved. This is the approach that is being planned for the students in construction-related disciplines scheduled to start in 2008/09.

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