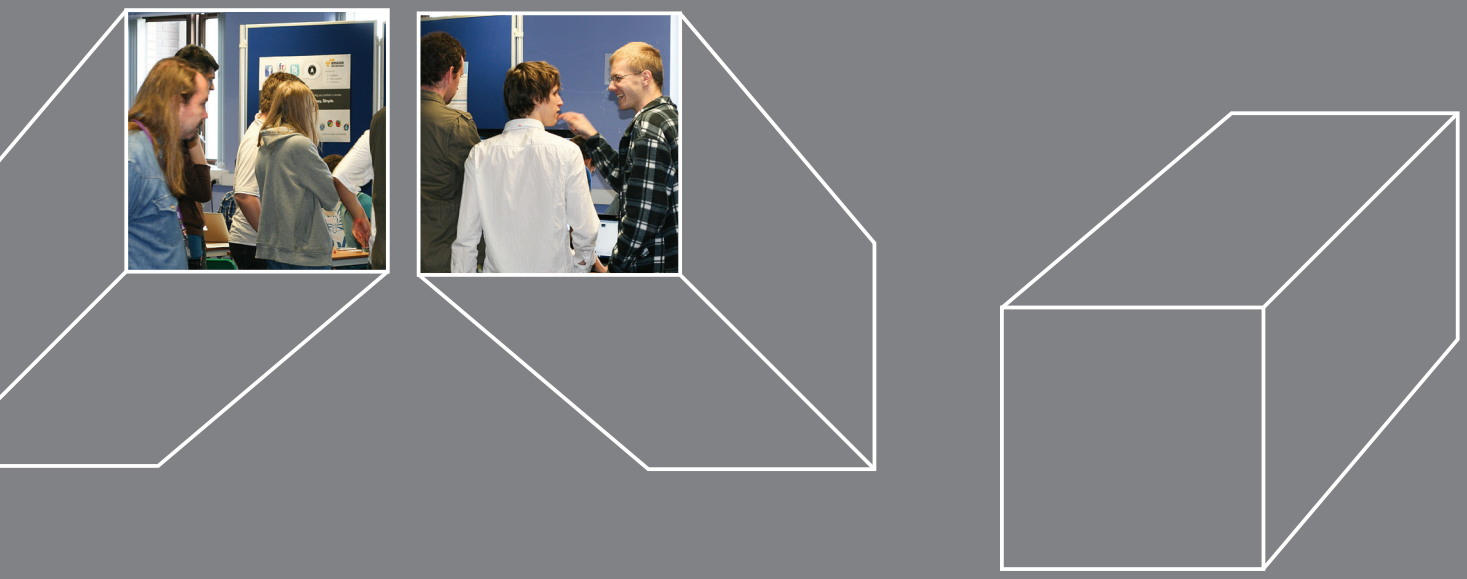
National HE STEM Programme

Part-time students in the workforce

A guide to practice in course provision

John W Davies, Brian Counter, Mark Davison, Steve Luke, Peter Mills, Jon Ordidge and Alfred Gand

Project funded by the National HE STEM Programme via the Midlands and East Anglia spoke



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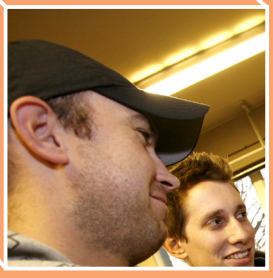

Short abstract

A collaboration between five universities (Coventry, Aston, Derby, Nottingham Trent and Wolverhampton) involved in providing HE STEM courses for part-time students in the workforce has produced this guidance on part-time provision aimed at those wishing to enhance existing provision or create new courses. The guidance has been based on the experience of the collaborators, on examples of effective practice within the collaborating universities and at other institutions in the Midlands and East Anglia region, on discussions with selected employers, and on the views of students expressed via an online questionnaire. The guidance includes approaches to key issues including range of provision, characteristics of part-time students, employer perspectives, delivery arrangements, support for part-time students, part-time students as a resource, flexible learning, tailored and work-based provision, the student view, challenges and barriers, and approaches to increasing participation.

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Examples 1 and 2: Chris Smith, Coventry University

Example 4: Mike Peters, Aston University

Summary of content

1. Introduction

Part-time study offers excellent opportunities for students and departments, and is an attractive alternative to full-time study with its associated debt. The aim of this document is to share ideas for enhancing existing provision, and provide guidance to those considering new part-time provision. Material has been collected from the collaborators' own institutions (Coventry, Aston, Derby, Nottingham Trent and Wolverhampton), from other institutions, from employers, students and the literature. The focus is on on-campus delivery and most of the examples are from engineering, but the guidance is intended to have applicability to all STEM subjects.

2. Part-time provision

2.1 Range of part-time provision in HE STEM

Undergraduate qualifications that are available in part-time format range from Certificate to MEng; delivery can be on-campus or off-campus; part-time students can be taught together with full-time students or separately, and there are benefits in both approaches; part-time provision is typically timetabled as day-release, evenings, one- or two-week blocks, or weekends; it can be tailored for employers, or work-based; all these modes can contain elements of distance learning.

2.2 Part-time students

There is no 'typical part-time student'. Characteristics and needs of part-time students in the workforce are related particularly to: previous education, age, employment experience, and time pressures.

2.3 Employer perspectives

We have held interviews with ten employers. In general, employers are supportive of their staff studying part-time, as a form of motivation and staff development. They are particularly supportive of technicians taking qualifications like HNCs in engineering, then possibly progressing to degrees if they show sufficient aptitude and commitment. Some employers would like more input to curriculum design. Most of the employers fully fund the fees of their employees' part-time study but generally require them to make up time during the week. The likely impact of higher fees is that employers will be more selective about who is supported.

2.4 Value of part-time students

They bring industry knowledge and experience, they demonstrate the value of professional attributes and working practices to full-time students, they strengthen links with employers, and they can be used as a resource, for example as mentors.

3. Part-time delivery arrangements

3.1 Entry, transition and induction

Part-time students typically enter degree courses in years 2 or 3. Accreditation of prior experiential learning may be appropriate and bridging studies may be necessary. Induction arrangements must be suited to their needs. Induction events must be comprehensive in their coverage but may need to be compact to fit with part-timers' attendance patterns.

3.2 Part-time v. full-time course structure

Whereas full-time students take 120 credits in each year, part-time students take fewer: typically 60 or 80 (sometimes 90). This determines the total length of their course. An example course structure is presented.

3.3 Integration or separation

When part-time students are taught together with full-time students, their value to the cohort as a whole can be realised; there may also be efficiency gains. When part-time students are taught separately, delivery and assessment can be suited to their learning styles, and the timetable can suit part-time students with no disadvantage to full-timers.

3.4 Timetable format

Characteristics of alternative delivery formats are considered: day-release, blocks (one-week, two-week), evenings, and weekends.

3.5 Group work and project work

Where part-time and full-time students take group projects together there may be educational benefits in forming mixed groups. However many departments have turned away from this practice. There are some interesting educational issues involved, and we summarise these. Benefits of mixed groups come from the interaction between part-time and full-time students. One disadvantage is seen as the risk of lower student satisfaction (among part-timers). In some circumstances separate project briefs can allow part-time students to carry out projects that are work-based.

4. Support for part-time students

4.1 General support

Support for part-time students should match their needs; this includes easing time pressures through effective timetabling, providing flexibility, and giving advice to those who have been away from study.

Designated year tutors for part-time students, and good contacts with employers, are helpful.

4.2 Online resources

Part-time students attach importance to the support they receive when they are off campus and much of this takes the form of electronic communication with staff and use of online learning resources. We give an example of web-based maths support provided at Aston to compensate for the difficulties part-time students face in attending on-campus maths support.

4.3 Using distance learning

In their use of online resources part-time students rely on elements of distance learning to support their studies. We also briefly consider OU-style distance learning. This approach to part-time study may make the balancing of time commitments easier to manage compared with on campus attendance, but the effects on motivation are thought to be negative.

5. Using opportunities

5.1 Contributions by part-time students

Examples of arrangements to enable full-time students to benefit from the industry knowledge and contacts possessed by part-time students are described. These include schemes for part-time students to provide mentoring to full-time students.

5.2 Opportunities for part-time students

We describe the 'embedded technician scheme'. This is an opportunity for part-time students to complete the preparation for becoming professionally qualified as Engineering Technicians within their course, with bespoke review procedures by the professional institution completed on campus.

6. Flexible learning

6.1 Flexible response

We discuss responding to more individual needs by part-time applicants, and as an example give details of a short qualification designed to satisfy this type of need.

6.2 Tailored courses

Course content and delivery may be tailored to the needs of specific employers. Most of this section reflects on the experiences at Aston in providing a foundation degree for the power engineering industry.

6.3 Work-based learning

We focus on the Engineering Gateways initiative of the Engineering Council which allows working engineers to gain the qualification that they might be lacking to become professionally qualified through work-based learning.

7. Student view

A questionnaire survey of part-time students at the collaborating universities has been carried out. We present the findings under the subheadings: contact/support, programme, timetable, other students, coursework, relevance, opportunity, challenges, and promotion of courses.

8. Challenges and increasing participation

8.1 Challenges and barriers

The areas covered here are student numbers, the NSS, and the main challenges that might make a department cautious about developing new part-time provision.

8.2 Increasing participation

The questionnaire survey of part-time students indicated that students feel courses should be advertised more strongly as being professionally accredited, and employers should be given more support in sponsoring employees to study part-time. Employers clearly have an important role to play in increasing take-up of part-time study opportunities. Professional institutions can contribute by highlighting the part-time study route in their careers advice material.

9. The main message

Providing the opportunity for part-time study is a significant commitment for a department, with significant challenges and significant rewards. Key points are listed.

1. Introduction

Why has this guide been written?

Part-time study offers excellent opportunities for students educationally and professionally, and, at a time of increasing concern about tuition fees and graduate debt, is an attractive alternative to full-time study. In many ways part-time students in the workforce can be a significant asset to a course. For these reasons it has been considered timely for a group of academics with experience of, and enthusiasm for, part-time delivery, supported by the National HE STEM Programme, to work together to produce guidance on part-time delivery to promote its benefits and propose approaches to the common challenges it presents.

What does this guide aim to achieve?

The aims have been

(1) to collect and share ideas in order to provide practical support for those seeking to enhance or adapt existing part-time provision, and

(2) to present a set of guidance for those considering creating new part-time provision.

This document is not a dispassionate review of part-time courses; it has been written very much 'from the inside'. It is intended to promote part-time delivery, but at the same time to point out (and help with) the challenges.

How has this guide been compiled?

The collaboration has been led by Coventry University and has included Aston University, University of Derby, Nottingham Trent University and University of Wolverhampton. Much of the guidance has been derived from the work carried out by the collaborators. Material has been collected from within the collaborating universities, from other regional universities and colleges, from discussions with employers, and from a questionnaire survey of part-time students.

Apart from the work of the collaborators, and the published literature, one other source of data has been used extensively in the compilation of this guide: a series of studies of part-time students and graduates from Coventry University over the period 2007-2012, including semi-structured group and individual interviews (Davies 2008; Austin et al., 2011; Davies et al., 2012), and a study that also included interviews with full-time students in 2011 (Davies and Rutherford, 2012). Quotes from these interviews are used to support and enliven the text of this guidance throughout. The student view is also represented through the presentation of quotes from the questionnaire survey of part-time students carried out as part of the immediate project (section 7).

Effective practice at other HEIs in the region offering part-time courses has been investigated to identify useful examples. The region has been taken as the Midlands and East Anglia, as defined within the National HE STEM Programme. From a list of part-time providers of HE STEM in the region, all who were willing to be involved were visited. These were:

- Anglia Ruskin University, Civil Engineering
- Burton and South Derbyshire College, Civil Engineering
- Harper Adams University College, Agricultural Engineering
- New College Nottingham, Civil Engineering
- The Open University, Mathematics
- Stourbridge College, Construction, Built Environment, Building Services Engineering
- Staffordshire University, Engineering

The examples of effective practice collected are presented under the appropriate heading in this guide.

The outcomes of the discussions with a sample of employers are presented in section 2.3.

A contribution to steering the project has been made by a further collaborator, Keele University (Dr Ewan Russell, Mathematics), giving the perspective of a STEM teaching group not currently involved in part-time delivery.

What does this guide cover?

We have attempted to cover the range of provision, the characteristics of part-time students in the workforce, employer and student perspectives, delivery arrangements, support for part-time students, part-time students as a resource, flexible, tailored and work-based provision, challenges and barriers, and approaches to increasing participation.

The experience of the team of collaborators for this project has only covered on-campus delivery, and the outcomes are inevitably focused on this mode. For the same reason, most examples presented in the guidance relate to engineering, but the guidance as a whole is intended to be applicable to all STEM subjects. We use the narrow definition of STEM (used within National HE STEM Programme) as covering chemistry, physics, engineering and maths, and concentrate on higher education at levels 4, 5 and 6.

2. Part-time provision

2.1 Range of part-time provision

Undergraduate qualifications offered part-time include University Certificates or Diplomas, HNCs, Foundation Degrees, Bachelors degrees (typically BSc or BEng) and undergraduate Masters (for example MEng). Some part-time students are simply seeking credit for specific modules (perhaps to satisfy professional bodies). Courses are delivered in a variety of ways.

Broadly 'traditional' part-time delivery is usually delivered on campus. Part-time and full-time students may be taught together, or part-time students may be taught separately. Classes may be in the evenings, or timetabled to fit with structured release from work, most commonly day-release or block-release (commonly of one or two weeks, or at weekends).

Courses that are tailored for specific employers may be delivered on campus or at the workplace. They are likely to contain elements of work-based assessment. Courses where the learning is entirely work-based require supervision and mentoring roles to be taken by the university and the employer.

Elements of distance learning are present to some extent in all these models of part-time provision. Courses based more entirely on distance learning are available in some STEM subjects.

2.2 Part-time students

There is no such thing as a 'typical part-time student'. Most larger studies of this student population make that important point.

> *Like other studies, our research reveals the enormous diversity of part-time higher education students, and of their backgrounds, circumstances and aspirations. There is no 'typical' part-time higher education student.* (Schuller et al., 1999: p140)

Of course, this diversity is partly a result of the range of part-time modes available. Each of these may attract different types of student, with different characteristics and different preferences and needs.

The guidance in this document relates particularly to part-time students in the workforce - those who are studying whilst also working. The characteristics and needs of part-time students in the workforce are related to some key aspects: previous education; age; employment experience; and time pressures.

Previous education

Some part-time students leave secondary education with comparable qualifications to those who take a more 'conventional' full-time route (for example, good A-levels). Others have left school or college with incomplete qualifications and pursued a complex route to part-time higher education.

> *I started off on the tools, progressed from there, went to an office role, a management role. The next step was the HNC … and the next step was to go on the degree, and that's what I've done.*

It is a common characteristic of part-time students that they chose (or chanced upon) their area of work long before choosing the subject of their degree.

In STEM subjects, the disjointed or incomplete preparation for HE that part-time students may have experienced can cause particular problems in the area of mathematics. For example, in a survey (Davies, 2008) of 80 students of Civil Engineering at Coventry University (involving roughly equal numbers of part- and full-timers), the proportion with A-level maths was 69% of full-time students, but only 17% of part-time students (the remainder of whom had, instead, HNC or similar qualifications).

> *[As a result of] missing out A-level Maths, I always feel like there's a gap in my maths education between finishing school and then degree, where I either didn't take it in when it was at ONC level and I didn't understand it, or it just hadn't been taught to me.*

But in terms of previous education, again, there is no 'typical part-time student'. While many may not have achieved their full potential at school and only discovered their motivation to study through their ambition to progress at work, others have always been committed to academic study and have simply chosen to take the part-time route on leaving school - to work and earn, in parallel with gaining a degree.

Age

Typically, part-time students take longer to complete their HE studies and have often taken longer to reach the stage of starting them. They are, therefore, older on average than full-time students at the same level.

> *Part-time students are generally a bit older, a bit more mature, and you're thinking you want to put that bit more effort in.*

This can be a significant factor in the attitude of part-time students to their studies, but differences in age should not be oversimplified. A study of students of civil engineering at Coventry University (Davies, 2008) found that the average age of part-timers in years 2 and 3 was 26.4 compared with 23.4 for full-

time students. Most of the full-time students were, as expected, in the age range 20 to 22, but many were significantly older. The distribution of those aged 30+ was fairly similar for both groups.

Employment experience

Part-time students employed in a professional discipline related to their studies have the potential to benefit from the juxtaposition of academic learning and its practical applications. This provides an excellent, meaningful context for their education.

I could see that the work I was doing at university was directly related to what I was then doing the next day in the workplace for real.

They also apply professional skills acquired at work along with a distinctive 'workplace attitude' to their studies which generally enhance their academic achievements.

Going to work gives you responsibility and a useful attitude, how to manage your time.

Part-time students employed in a different area from their study discipline may experience the second benefit but not the first.

Time pressures

Feedback from part-time students consistently indicates that their study requires hard work, eats into social life, and (for many) feels as if it takes over completely.

It's quite hard, very demanding actually, it takes up your social life , and the thing I find is that it's always on your mind. You feel (that's the worst thing I think), you feel when you're not doing it, that you should be doing it.

Family commitments can make this even harder.

I've got a child as well so that makes it even more difficult. Trying to look after a baby, well he's 2 now, but he was born in April, just before exam time a couple of years ago, so that was very difficult, trying to find time to revise for examinations, up all night feeding the baby as well as working full-time.

Particular requirements at work can also add to the pressures.

Academically the work is tough - fitting in workload with full-time work and specially when I was working on the railways … every weekend I'd be out doing bridge surveys overnight … then trying to get up on Sunday and do coursework as well is tough work.

This aspect of the part-time study experience appears to have attracted most attention of researchers. For example Kember and Leung (2004) and Yum et al. (2005), who studied part-time students in a range of subject areas in Hong Kong, consider the employment of 'coping mechanisms' by part-timers and identify the sacrifices that must be made. Nicholl and Timmins (2005), studying nursing students in the UK, concentrate on the high levels of stress experienced by part-time students.

Competition for time is the prevailing challenge for part-time students and moulds their needs for support during their studies. However, many, especially those who work in the area of their studies, benefit from some advantages already discussed, including the beneficial combination of work and study, and the opportunity to use their workplace skills and motivation to enhance their performance.

2.3 Employer perspectives

Interviews have been held with a sample of employers (using existing contacts of the collaborators) to identify the key issues from an employer's perspective. The employers involved have been:

- Amey
- E-on UK
- John Nolan Associates (small consultancy)
- JNP (medium consultancy)
- Morgan Sindall
- Network Rail
- Shaw Group
- Severn Trent Water
- URS Scott Wilson (large consultancy)
- WSP CEL (medium consultancy)

In all cases the interview was with a member of staff with responsibility for recruitment and/or training of engineers and technicians.

Employers' experiences of supporting staff in part-time study are generally good. They support staff in this way to provide motivation and staff development. Staff development aspects involve both personal development and technical upskilling. Some employers believe it is important to provide these opportunities, especially to employees who demonstrate the potential for higher education through part-time study at lower levels. However the view was expressed that not everyone has the motivation to succeed on a degree course, and that employers therefore must be selective in who they support. The general view is that many technicians who are supported through a qualification like an HNC will not have the motivation or aptitude to progress to a degree. Employers are not seeking to pressure employees to progress their studies beyond the stage that makes the most of their abilities.

Majority of the people doing part time studies are CAD technicians. … [This] enables them to understand better what they are doing and motivates them to have something to look up to. The odd ones carry on to degree level to enable them become chartered.

It is worth noting that for these employers the typical part-time student in higher education is a technician taking an HNC and possibly progressing to a degree, not a school-leaver with good A-levels on track to become a graduate from day one of employment. In the current economic climate most employers have no shortage of applications from recent (full-time) graduates, and while they can see that the combination of work and study for part-time students gives them an excellent experience (and a potential advantage over full-time graduates), it is not a priority for them to seek to increase take-up of this route at present.

Employers consider that supporting part-time study by existing staff has a positive effect on staff retention; a minority of organisations require staff supported in this way to remain with the company for a certain period but that is not the norm. Most employers feel that supporting part-time study makes them attractive as employers to new staff.

Regarding mode of study, employers are mixed in their preferences for day-release or for block attendance (one- or two-week), regardless of the level of the qualification. One employer felt that two-week blocks made too much impact on work flow. Some employers leave it to employees to decide on mode. One large employer indicated that in future they are going to move towards an internal system based on work-based learning rather than conventional day-release.

A common concern is the relevance of course material to the workplace, and some employers feel they would like more input into curriculum design. Smaller employers are generally less interested in this. One employer described having to withdraw employees from part-time study because the expected content was not available.

I have guys doing HNC and a few weeks into the course have found the modules not really related to what they are doing at work, and have found other alternative courses that are [more] beneficial to our business and the employees.

Employers are most interested in ensuring appropriate content for lower level courses, especially in order to sustain the interest of students.

At lower levels, i.e. ONC, HNC, you've got to target specific courses and then interrogate them a bit to ensure they are delivering what you want them to deliver.

At degree level this is generally felt to be less necessary. Employers prefer to find a local course unless there are strong reasons for going further afield (for example, specific modules).

Most of the employers fully fund the fees of their employees' part-time study. But many require them to make up the hours during the week, and if this is not possible employees take the time from their annual leave entitlement. Not all employers require this.

In the current economic climate employers are becoming selective about who to support through part-time study. However, the future, including the impact of fee increases in 2012, is not seen negatively. The likely impact of higher fees is that employers will be more selective about who is supported.

I don't think it stops us doing it, but might limit the number because we haven't got a bottomless pot of money.

There was a fairly low level of awareness of the new opportunities for part-time students to access loans, and a number of employers feel that if they are providing the opportunity for employees to study part-time, the support should be from the company. But this is likely to be dependent on the economic outlook of the particular sector of the industry.

[Staff] may have to consider taking loans, but my personal preference would be not to ask them to do so. If you are giving somebody that opportunity through a company then the company should cover the cost of it; but that will depend on the industry and how much money the company is earning.

2.4 Value of part-time students

Academic staff involved with part-time delivery in HE STEM are generally aware of the value of part-time students, to the department, to the course and (where part-time and full-time students are in contact with one another) to other students. This is particularly the case when part-time students are employed in the field of work for which their degree prepares them. Examples of ways in which part-time students can enhance the experience for all students are presented in section 5.1.

Within the classroom there are several characteristics of part-time students that can have a positive effect. Many part-time students are older than their full-time counterparts and present a more serious and mature approach to their studies. Full-time students benefit from seeing how those who have to do a four day working week as well as fulfil family commitments manage to perform well in their studies. Part-time students tend to produce coursework to a high standard of presentation, which staff are then able to show to full-timers to demonstrate what can be achieved. A similar level of professionalism is displayed in time

management and attendance. Part-time students tend to be more engaged and are able to relate subject content to industry experience. Class integration also enables part-time students to be used as a ready sounding board for current industry practices.

Part-time students can be a means for strengthening the industrial links of a department. An Industrial Advisory Committee can benefit from significant membership by the employers of part-time students, and have an important influence on course design, provision of work experience opportunities and site visits, and inputs to realistic design project work.

Good relations with the employers of part-time students give other spin-off benefits including:

- Rapid feedback on the relevance of teaching and curriculum developments
- Understanding by employers of HE institutions and their culture and processes including the current changing strategies such as the 2012/13 fee structure, NSS and league tables
- Possible graduate recruitment
- Potential consultancy or partnership work that can enhance teaching

3. Part-time delivery arrangements

3.1 Entry, transition and induction

Entry

Because of their previous qualifications, many part-time students do not enter Bachelors degrees (three years full-time) at year 1 (level 4). They are more likely to enter direct into year 2 (level 5) or year 3 (level 6). An HNC (now 120 credits, but previously 150 credits) usually leads to direct entry to year 2. An HND qualification, at some institutions, allows entry at year 2, while at others it allows entry to year 3. In engineering courses, year 3 entry from an HND is common to an Incorporated Engineer degree but not to a Chartered Engineer degree, and some bridging modules at year 2 may be required. A foundation degree typically leads to entry to year 3 with appropriate bridging studies.

Accreditation of previous **experiential** learning is given at some institutions for part-time students with significant industry experience. However, at Aston (foundation degree, power engineering), an APEL scheme was used in the early years of running the programme to allow students exemption from certain aspects of the first year of the programme. But this process was effectively abandoned following some very mixed second year performances from students who were granted APEL.

Table 1 gives a matrix of entry requirements that has been developed at the University of Derby (civil engineering) for a range of possible entry levels, and illustrates an approach to defining entry at different levels and use of bridging studies.

Bridging studies

As illustrated in Table 1, on entry to specific courses, support can be provided in the form of bridging studies. As a further example, some students who are qualified to enter the part-time BSc Engineering degree (general engineering) at Coventry University by virtue of their professional experience rather than purely on the basis of academic qualifications need bridging studies to prepare them for the start of the course. So, a bridging module is provided to take students to a level where they will be ready to succeed.

The bridging module is taught at first-year university level over 12 weeks on a part-time, evening basis, but in an accelerated and integrated manner that cements theoretical concepts together with academic skills and abilities prior to starting the BSc Engineering (general engineering) degree. Further information is given as Example 1, an extract from the information available to applicants on the university website.

Example 1

Coventry University - Part-time BSc in Engineering (general engineering)

Bridging module

The aim of the module is to enable a student to document and bridge their experiential learning into academic practice with the intention that, upon achieving a good pass in this module, they can progress on to the BSc Engineering degree at stage 1 with improved confidence and academic abilities. Enrolment on this module is at the discretion of the university as the student must demonstrate the ability to bridge within this module (1 semester delivery) any missing academic competencies, knowledge and skills, and analytical ability that underpin the first year of the BSc Engineering degree. Students will

Entry qualifications	HE credits	Possible experience	Part time progression on to foundation degree (FD) or BEng
HNC new	120	< 5 years	Direct entry year 2 FD
HNC old	150	< 5 years	Direct entry year 2 FD
HNC old	150	> 5 years	Direct entry year 2 FD or year 3 BEng + bespoke bridging following review
HNC old	150	> 10 years	Direct entry year 3 BEng + bridging
HND new	240	< 5 years	Direct entry year 3 BEng if approved
HND old	210	> 10 years	Direct entry year 3 BEng + bridging
NVQ, training qualifications, other	Not always clear	> 20 years	Entry to Advanced Diploma* or direct entry year 3 BEng with a detailed personal review of analytical abilities in the workplace

Table 1 - University of Derby, matrix of admission requirements

*Advanced Diploma in Civil Engineering Operations (Level 6 : 60 credits; this is a short evening course involving Management and a choice of high level technical modules. These could be studied as a skills top-up for existing graduates or a re-introduction to learning for mature students. There is more detail in section 6.2.)

Bridging - typically modules in Structural Design and Assessment, Engineering Maths and Fluids

engage in a taught experience that will guide them from their mixed learning background to form the foundation of a successful university experience.

In practice, this involves students participating in laboratory work and developing their understanding of the relevant underpinning theories and an ability to apply them. They then progress to a team project where they have an opportunity to use these new engineering skills to develop an engineering and business analysis of a simple product. This intensive module is taught over 12 weeks.

Transition and induction

In some key respects the transition experience of part-time students is substantially different from that of their full-time counterparts. Indeed, the general situation of most part-time students differs profoundly from that of full-timers. For many of the latter, the most important issues of transition may relate to the significant changes in their lives: moving away from home, and being given greatly increased independence in the way they live and how they approach their studies. Part-time students are different. They experience fewer changes in their lives: the home environment continues as before, even providing continuity, although there may be additional competition for personal time in the form of studying.

Far from having to re-invent their motivation to study (in the way that full-time students, separated from their parents and school teachers might have to), the existing 'workplace motivation' of working, part-time students can be applied, with great effect, to study. Whereas full-time students may lose motivation because of a poor understanding of where their studies will lead in terms of a career, part-timers have that understanding at the heart of their motivation.

However, part-time students face other sorts of challenges: shifting priorities between work, life and study; additional time and academic pressures; and, for some, the stresses of incomplete background preparation. Clearly induction may have a different role for part-time as opposed to full-time students, but it is still important.

Any induction for part-timers would aim, as a minimum, to avoid a comment like this (an authentic quote, but describing a mistake that was never allowed to recur!):

Because we're coming in to the equivalent of year 2 the University automatically thinks we're 2nd year students - don't need an induction. We didn't know where the library was, didn't know where the computer rooms were, didn't know the process for getting on to the computers, where you get your NUS cards from, your student ID cards, things like that were missed out.

A typical induction for part-time students (mostly entering at year 2 of the full-time course) would be a one-day event with roughly the coverage given below. Some introductory sessions might be together with full-time students, but most of the induction event would be presented to part-time students separately.

- Welcome to University, Faculty and Department
- Course outline
- Introduction to student services
- Online introduction to VLE
- Maths diagnostic test
- Library induction
- Health and safety induction
- Opportunity to order safety wear
- Collection of ID card
- Surgery for individual questions

As an example, induction for part-time students to the civil engineering courses at Coventry covers these headings. Results of the maths diagnostic test are returned to students a week later, with advice about strengthening areas of weakness by using online material provided by the Maths Support Centre. Full details of course procedures, course structure and module content are provided online. As a way of encouraging and enlivening their engagement with this material, part-time students are expected to complete an induction quiz, available online. A quiz score and appropriate feedback are provided when the answers are submitted. The quiz covers aspects of the University, Faculty and Department, course structure, finding module information, the academic year, and assessment (including coursework extensions and plagiarism).

The part-time only BSc Engineering (general engineering) at Coventry University has four evening induction sessions which students are required to attend before they start their studies (see Example 2). These sessions cover an introduction to the University, IT systems, the library, academic reading, writing for assessment, and giving presentations. All this is backed up by comprehensive online information about course design, mode of delivery, 1st year bridging module, induction, module choice, enrolment, what to expect as a student, timetable, detailed course documentation and information about the programme manager.

Example 2

Coventry University - BSc Engineering (general engineering) - part-time

Induction sessions

Induction session 1: Introduction to the University

- What is Higher Education?
- Coventry University: programme and module structure; intended learning outcomes
- Assessment methods: review and expectations of these methods
- Difference between formative and summative feedback
- Difference between education, training and learning
- Reflection and Kolb's learning cycle

Induction session 2: Using the University IT systems and academic reading & writing

- Introduction to university IT systems
- Module webs and course webs:
  - » How to stay in touch with each other and with course information
- Check that you can be contacted via your university email account
- Academic reading and writing 1

Induction session 3: Library skills and academic reading & writing 2

- Introduction to library session:
  - » Finding information to support your studies
- Academic reading and writing 2
- Paraphrasing article and CU Harvard Referencing
- Plagiarism

Induction session 4: Writing and presentations

- Can exams be made easier?
- Discussion of your final piece of directed preparation
- Prepare outline of group presentation

Further guidance on transition, induction and retention of part-time students, with emphasis on on-campus delivery, is provided by a recent guide (Davies, 2012).

For part-time students whose course is delivered in a way that means they will be on campus only for limited periods, online and printed materials are of particular importance and value in supporting induction. A good example is the high quality booklet 'Welcome to The Open University' (Open University, 2009). OU students are, of course, also supported by extensive material online. The particular requirements for induction to distance learning aspects of courses are explored by Forrester et al. (2005).

3.2 Part-time v. full-time course structure

Whereas full-time students take 120 credits in each year, part-time students take fewer: typically 60 or 80 (sometimes 90). In cases where part-time students take 60 credits a year, each full-time year is taken over two years: 4 years to gain a degree with direct entry to year 2, or two years with direct entry to year 3. With 80 credits a year, it takes 3 years to gain a degree with direct entry to year 2.

As an example, at Coventry University (Civil Engineering) the undergraduate MEng, taken full-time, is a 4-year course. Part-time students take either 60 or 80 credits a year depending on level (Figure 1). The majority of part-time students enter the course at year 2 with HNC or equivalent. From this entry point, the BEng can be achieved part-time in 3 years (it would be 2 years for full-time students). The part-time cohorts are coded '2a' (taking year 2 modules), '2b' (taking a mixture of year 2 and year 3 modules) and '3' (taking the remaining year 3 modules). Year 1 of the full-time course can also be taken part-time (over 2 years). To complete the MEng, year 4 of the full-time course is taken in 2 years part-time. So, for part-time students, from year 2 entry to MEng takes 5 years, and year 1 entry to MEng takes 7 years.

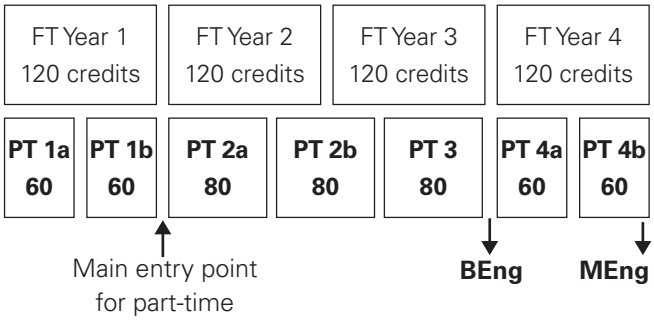

Figure 1 - Structure of full-time and part-time course (Coventry, civil engineering)

3.3 Integration or separation

When part-time courses are offered on campus as standard university courses, the value of part-time students to the cohort as a whole (section 2.4) is only realised when there is some level of integration of part-time and full-time delivery. Also potential efficiencies can be realised when the two cohorts are taught together.

Timetabling must be compatible with the attendance pattern of part-time students, and, where part-time students are taught together with full-time students, must fit with timetable requirements for full-time students. Some courses are taught entirely to mixed groups, and some are taught entirely to a part-time cohort only. Both arrangements have significant timetabling constraints, but the nature of the constraints is different.

There are many issues relating to timetabling of part-time and full-time groups together – particularly in trying to accommodate lab sessions, and complaints from full-time students about long days (pursued further in section 3.4)

An example of the issues in integrating part-time and full-time timetables (at Nottingham Trent University) is given as Example 3.

Example 3

Nottingham Trent University - civil engineering

Integrating part-time and full-time provision

Part-time student numbers are relatively low (5 to 10 each year). Part-time students study 60 credits per year, and take the same modules as full-time students with one exception: in place of level 5 *Construction Practice and the Environment* they study level 4 *Introduction to Structural Engineering*. This is in recognition of the fact that part-time students with an HNC have been found to have a weakness in structural analysis yet they are familiar with the principles of construction practice from work.

In general, nearly all formal lectures are delivered to part-time and full-time students together. The majority of seminar and laboratory sessions are run separately.

Level 5 modules are split into two subsets for part-time students. The sequence in which the subsets are taken alternates each year, effectively doubling the size of each part-time cohort.

- Subset A: Ground Engineering, Building Technology, Engineering Skills
- Subset B: Introduction to Structural Engineering (analysis), Structural Engineering (design), Further Engineering Mathematics

It has been found that the order in which the subsets are studied does not have a significant effect on the students.

Level 6 modules are always taken by the part-time cohort in the same sequence, subset A always being studied before subset B to give the students the knowledge base on which to build their individual research topic.

- Subset A: Further Structural Engineering, Ground Engineering, Water Resources and the Environment, Management and Transportation Studies
- Subset B: Individual and Group Projects, Professional Responsibilities

Level 6 Subset B has low formal contact in terms of class time delivery, which frees up at least half a day to allow part-time students access to laboratory and testing facilities for individual project research and testing work.

Level 6 lectures are timetabled on two days of the week. Although this constrains the full-time students' timetables it has in general been welcomed by these cohorts as it allows them clear time in the week to focus on coursework, project work and paid employment. Integration of both groups in lectures allows a broader range of contributions to discussion and removes the need for double delivery of the main lectures.

At level 5 it is difficult to timetable the 60 credit points studied each year into a workable one-day timetable especially where laboratory and practical classes are concerned and severely constrains the full-time timetable when trying to make economic use of teaching resources. The timetable for part-time students at level 5 is very congested and although the University and School run mathematics support sessions the students often find it hard to attend.

The part-time course will be retained even with the comparatively low intake numbers to provide students with an opportunity to earn and learn.

Advantages of joint delivery to part-time and full-time students	**Advantages of separate delivery to part-time students**
• Full-time students can benefit from contributions by part-time students • Efficiency (depending on cohort sizes)	• Delivery can be suited to learning styles of part-time students • Learning can be highly contextual • Freedom to have appropriate work-based assessments • Timetable can suit part-timers with no disadvantage to full-timers

Table 2 - Joint delivery v. separate delivery

In contrast, some courses are taught only to part-time students. The BSc Engineering (general engineering) at Coventry is not offered for full-time study. Some modules are shared with full-time programmes in related subjects, but even these are taught separately to the part-time group. This is seen as allowing a particular style of teaching which is highly contextual, is suited to students who do not see themselves as traditional academic learners (out of the habit of taking exams, for example), and allows use of work-based assessments.

3.4 Timetable format

The different alternative timetable formats for part-time delivery all have their advantages and disadvantages, as considered below. In this study, as we have seen in section 2.3, employers did not express a clear preference for a particular type of format. Different employers sending students to a common course may have different preferences. Also a format favoured at company level may still cause problems for individual students because of particular work deadlines.

Day release

Day release is a common format when courses are taught to mixed part-time and full-time groups. Cohorts of part-time students at different stages usually need to attend on different days of the week, to allow viable timetables to be created for staff and full-time students. Part-time students have a full programme on their attendance day. This means that full-time students have a similarly full programme on this day. This may lead to complaints from full-time students, for example that they are tired by late afternoon. (And in some cases the constraints of the timetable and room availability may require classes in the evening.) There is justification for the complaints but there is also a balance of advantages and disadvantages. There are certainly advantages of having part-time students in the class, and there are also advantages to full-time students of this 'blocking' of the timetable in terms of time management and availability for part-time employment.

Some small group tutorials and practical classes may be timetabled for part-time students on their attendance day but can be timetabled for full-time students on another day. Lab classes, run on a rota of small groups, can be timetabled on a completely different day for full-time students. For part-time students, if it is not possible for lab classes to be arranged during a gap in their attendance day, they can take place during the vacation (usually on the normal attendance day).

The constraints of the timetable usually mean that part-time programmes are limited in terms of module choice.

Block delivery

An example of part-time delivery in **one-week blocks** is Year 4 of the MEng in Civil Engineering at Coventry. Most of the modules are common to the MSc programme, and employers have indicated that at graduate level they prefer week blocks to day-release. Part-time and full-time students attend together in this format, and although it may seem that the format is best suited to part-time students, full-time students rarely indicate that they are unhappy with it. The experience for full-timers is highly structured: a heavily loaded week of attendance (formal delivery of one 15 credit module), typically followed by three weeks for study, coursework and project work. Part-time students take every second module (with twice the gap) and pick up the other modules the following year, in a complementary pattern.

An example of part-time delivery in **two-week blocks** is the foundation degrees in power engineering at Aston University, which is taught to part-time students only. This format is the one favoured by employers. Each block allows the formal delivery of one 20 credit module. Students take six of these blocks in one year.

Evenings

The BSc degree in Engineering (general engineering) at Coventry is delivered to part-time students only, on Tuesday and Thursday **evenings** and Friday afternoon (Friday afternoon is traditionally excluded from the working week in some areas of manufacturing). As the course is not taught to full-time students, the timetable can be arranged entirely to suit part-time students, and it is felt that employers of students on this course would not support day-release.

In other courses, evenings are used in conjunction with day-release delivery.

Weekends

Alternative delivery formats can be based on weekends, though this is more common for post-graduate courses. For example, a module block can be created from Thursday, Friday and Saturday of one week and then Friday and Saturday of the following week. Weekend attendance is also used in conjunction with significant elements of distance learning.

3.5 Group work and project work

There are difficult issues relating to group formation for significant elements of project work regardless of whether or not the cohort contains a mixture of part-time and full-time students. The issues include whether groups should be formed by staff or by the students themselves, whether groups should be contrived so that weak students can learn from strong students, how students should be supported in identifying team roles,

and how group work should be assessed. Where part-time and full-time students experience group project work in a mixed cohort, a further dimension is added.

Typically part-time students are well prepared for university group work because they have developed a range of relevant professional skills at work. At Coventry University (civil engineering) a variety of approaches have been used for forming groups of part-time and full-time students in a mixed cohort.

There has been an interesting study of project work in year 2, where students working in groups of 5 develop proposals in response to a realistic brief (Trujillo, 2011). The cohort contains a mix of full-time and part-time students. In 2009/10 students had been free to form their own groups, and the part-time students had all chosen to work with other part-time students. In 2010/11 students were placed in mixed groups (based on a skills audit of all students) and part-time students were distributed between groups. In 2009/10, the average mark for part-time students was 10.6% higher than the average mark for all students, and the average mark for full-time students was 3.0% lower. In 2010/11, the average mark for part-time students was 6.9% higher than the average mark for all students, and the average mark for full-time students was 0.5% lower. (Trujillo presents a more detailed break-down, but we concentrate here on the contrast between part-time and full-time students overall.) While not proving the value of any particular approach to group formation, this study certainly suggests there is merit in considering the composition of groups in terms of mixing those who have current experience of the industry with those who do not, even though the benefits (in terms of marks at least) appear to go to those without the experience.

In project work at Coventry in year 3, civil engineering students work with students of architecture, architectural technology, building services engineering, building surveying, construction management and quantity surveying. This is a realistic design and construction project, with a brief based on a real case, and supported by inputs from practitioners and by real site data. In 2010/11, part-time and full-time students were deliberately mixed in the group formation process, with group membership determined by staff. In previous years a variety of approaches to group formation had been used. A study based on semi-structured individual interviews with part-time and full-time students (Davies and Rutherford, 2012) was carried out to investigate student perceptions of this arrangement. There was a strong consensus among full-time students that they benefitted from having part-time students in their group. The main benefits cited were the part-time students' industry experience, their organisational and time-management skills, and their access to example documents and resources from work.

> *They've been able to get some example documents that we can take some inspiration from*
> [Full-time student]

By contact with the part-time students, it is clear that full-time students could see the value of industrial experience. Several full-time students were aware that the realistic project work was making use of knowledge that the part-time students possessed from work, but that they (full-timers) had not gained from their university studies up until the project.

> *[They have] just a bit more knowledge than really otherwise we would have had from just being taught in a university environment*
> [Full-time student]

Part-time students were aware that they had experience, knowledge, and an understanding of how to approach engineering tasks which the full-time students did not have. Because of their experience it was common for part-time students to provide a certain degree of leadership within a group. It was clear that when part-time students were placed in a coordinating role, or assumed such a role, they were often able to set standards and provide guidance using their knowledge and experience from professional practice. Some part-time students felt they had benefitted from the project work in mixed groups in terms of personal and professional development.

> *Particularly people of our experience – you don't get a chance to lead anything [at work]*

But this view was not shared by all the part-time students interviewed and there were strong feelings by some that the arrangement benefitted full-time students more than part-time students, and made excessive demands on part-timers' precious time.

> *With the workload we've got at the moment at university, sometimes managing people takes so much time it affects your other modules.*

In 2011/12 there was far more student input to the group formation process but within a structure that still encouraged the formation of groups that contained both part-time and full-time students. Student feedback about the group work experience and the benefits of group members learning from each other was positive (Rutherford et al., 2012).

If part-time students already possess a good level of professional attributes that they have developed at work, can they benefit much from project work at university which aims, in part, to develop those very attributes? A study by Davies et al. (2012) has attempted to answer this question. Semi-structured group interviews with 42 part-time students (plus 10 full-time students who had taken a year-out in industry) were held. The responses indicated that the students

felt in general that the projects were valuable. They benefited particularly from working in areas, mainly technical, that did not correspond to their work area.

The bit I'm doing is helping tremendously … I'll be designing the structure - that's all going to come from university not from the workplace

However, they indicated that many aspects of the group working experience at university were not realistic, mainly because of the management structure that always exists in the workplace and the professional standards expected.

At work I never came across a situation in which someone said do this and it wasn't done ... You can't say to your project manager: sorry I didn't feel like it

All civil engineering students at the University of Wolverhampton undertake a group design project during their final semester. For part-time students this is the culmination of six years of study and they bring a wealth of industrial experience with them. Staff allow students to select their own groups (of 5 or 6) and only intervene where necessary. Groups mostly consist of all part-time or all full-time students, but there are some mixed groups. There are a number of interim presentations during the semester. Staff encourage all groups to attend the presentations so that they may learn from the feedback to their own group and to other groups. Project briefs are deliberately open ended and students are encouraged to create imaginative solutions. Some part-timers can be constrained in their views by their practical experience. The full-timers tend to be more open-minded and can come up with more novel ideas; they have not been influenced by years in industry. In this regard part-timers can benefit from the more uninhibited views from their full-time colleagues. The part-timers know that realistically they can only meet once a week with their colleagues and so they tend to be very business-like about their meeting, assigning tasks and demanding that deadlines are met. There has been friction when part-timers feel full-timers have not been pulling their weight. The final grade reflects the work carried out by each individual member.

Problems with mixed groups at Nottingham Trent (civil engineering) have resulted in the department returning to student-selected groups in which part-time students do not choose to work with full-time students. The experience has been that mixed groups for project work are not favoured by many students due to the nature of student interaction outside of formal contact sessions and constraints caused by the part-timers being on day release. Often strong bonds between part-timers, developed in the early years or even pre-university (via work or previous study), hold them together in group work. Staff are aware that there is potential loss to both parties by not requiring interaction.

At Staffordshire University, on the BEng Automotive Electronics and Engineering, part-time and full-time students are required to complete group based projects at levels 4 and 5. Because of the reluctance of students to have their groups chosen for them, they are allowed to choose their own groups. These usually end up being all part-time or all full-time students. The University accepts that there would be benefit for full-time students if the groups were mixed, and realises that this opportunity is missed. However, the part-time students do benefit for each other's different industrial experience. Although these are group based projects, submissions are individual, and students are given individual marks.

There are many situations in which, in spite of the potential benefits in mixing part-time and full-time students in project groups, it is more suitable for project work to be structured differently for part-time and full-time cohorts. At Coventry in year 4 of the civil engineering MEng, full-time students work in groups on a realistic project based on an authentic brief from industry. However, for part-time students the project is work-based. It is assumed that at this stage, part-time students take on significant engineering challenges at work. They are required to select an element of their normal work that will allow them to satisfy the learning outcomes of the project module, and carry out an in-depth evaluation.

At Staffordshire University, BEng Automotive Electronics and Engineering, part-time students carry out a 30 credit *Industrial Responsibility* project. For full-time students the project is supervised on campus. For part-time students it is work-based. They demonstrate industrial technical skills through diaries, reports and interviews.

Advantages of mixing part-time and full-time students in groups for project work	**Advantages of not mixing part-time and full-time students in groups for project work**
• Interaction between part-time and full-time students • Part-timers benefiting from contact with the full-timers, potentially: mathematical skills; time for library research; ideas less constrained by industry norms • Full-timers benefiting from the practical experience of the part-timers	• Positive part-time student satisfaction, potentially registered in the NSS (National Student Survey) • Separate project briefs can be designed to suit the different background and circumstances of part-timers and full-timers

Table 3 - Mixing v. not mixing part-time and full-time students in project groups

At Anglia Ruskin University final year part-time students on the BSc/BEng Civil Engineering are required to complete an individual work based project that consists of two parts. The first part involves keeping a diary over a 12 week period. During this period students identify three problems that have occurred on projects with which they are directly involved. They have to explain their involvement and the outcome. Supporting evidence may include specifications, drawings, engineer's instructions, letters, statements from the student's line manager or signed diary entries. The second part to the project is a PDP exercise focusing on competences such as management, problem solving, numeracy and communication.

Table 3 contrasts the advantages of mixing part-time and full-time students in project groups with the advantages of not mixing them.

4. Support for part-time students

4.1 General support

Course providers should create support structures and arrangements that match the particular needs of part-time students. Clearly, a significant challenge is to ease as much as possible the time pressures from competing demands for study, work and family. However, there are limits to what course providers alone can achieve.

The pressure on time experienced by part-timers can be worsened if attendance arrangements are not well planned. Here, course providers should remember that there are many alternative formats for part-time delivery (section 3.4).

With a tightly packed timetable when part-time students are on campus, access to staff outside classes may be difficult. Some students may prefer to have more flexible access to staff and subject support via email or online, though some do feel that they miss out on direct contact.

Clearly, it is important that staff are responsive to the communication needs of their students. Part-timers often mention the resource they have at work in terms of access to subject-specific expertise.

> *You've also got an invaluable resource at work. I've got structural engineers, geotechnology, hydraulics, materials, loads of people I can ask and I often do, to help out, explain things, so that side of being a part-time student is great.*

But, ideally, this work place resource should be in addition to the support students receive from academic staff rather than in place of it. Academic staff should be prepared to give special support to part-time students to help compensate for their problems of time and access. In timing of coursework submissions, for example, it may be part-time students whose constraints should be given most consideration. However, submission dates must be fair to full-time students too. There should not be greater flexibility in compliance requirements for part-time students than for full-timers beyond the university procedures already in place for considering special circumstances.

Some part-time students face transition challenges, especially as a result of joining the course as direct entrants in later stages. They may not be used to university-style examinations or reflective or research oriented coursework. Staff should attempt to identify these special needs through processes of formative assessment and give early feedback to provide guidance.

At Nottingham Trent University (civil engineering) issues arising from part-time students' study experiences can be raised and resolved via regular meetings with tutors. Each part-time cohort has a year tutor. The group meets together with the tutor typically three times in term 1, twice in term 2 and once in term 3. They discuss any issues arising from the course, the development of academic skills, revision and exam skills. These meetings are a two-way exchange, with the tutor giving information and advice, and students raising issues, asking questions, and providing an industry viewpoint.

The University of Derby (civil engineering) has a formal monitoring process in place for attendance and coursework submissions. Regular reviews of progress are made by module leaders and where appropriate special arrangements are made to accommodate students' work commitments. Minimum attendance of 60% is tolerated for part-time students and staff may need to provide some personal tutorial work to make up the shortfall. This approach is appreciated by part-time students concerned about missing days at university because of work commitments. Members of staff meet with employers to discuss progress of individual students and to receive feedback on the relevance and appropriateness of study material. Employers know when important deadlines are due so that they can co-ordinate the planning of work activities. A twice-yearly post semester review takes place with employers Severn Trent and URS Scott Wilson where individual students' progress is discussed.

At Burton and South Derbyshire College (HNC/HND Civil Engineering) staff understand that commitments at work can often lead to part-time students having to miss lectures, which may cause them to fall behind. To overcome this problem they offer one week during Easter, and three weeks during the summer, where the part-time students can attend college to catch up on any work that they may have missed. Similarly at Stourbridge College, part-time HNC/HND Civil Engineering students are offered revision/catch-up sessions during vacation periods.

Access to facilities is another important area in support for part-time students. When they are on campus on day-release, their time may be so full of classes that it is difficult to find space to use support facilities such as the library or maths support centre. When attendance is in the evening, some facilities may simply be closed.

> *I think access to the [Maths Centre] helps and it's difficult for part-timers to [access this support] … if the Maths Centre has early closing on the day you're in University it's difficult to seek the assistance you require, whereas the full-timers can fit it in where they want.*

4.2 Online resources

Part-time students attach particular importance to good access to staff and course materials while they are off campus.

Typically part-time civil engineering students make extensive use of a VLE. Being able to access notes and tutorials at any time and remotely is an obvious benefit for them. Electronic submission of coursework can also be particularly helpful to part-time students. The VLE can also provide a platform for a range of study support including self-assessment questions. The clear benefit for part-time students is having an opportunity to engage with a learning tool when they are not on campus.

An approach to resolving issues relating to access to support facilities is used to provide maths support to students on the Aston University foundation degrees in power engineering. This is by means of a web-based resource - Example 4.

Example 4

Aston University foundation degrees in power engineering

Web-based maths support

Students on the Aston University foundation degrees in power engineering have limited access to on-campus support structures, particularly for mathematics. To compensate for this, support is provided using Elluminate, a web based video conferencing system (http://www.blackboard.com/Platforms/Collaborate/Products/Blackboard-Collaborate/Web-Conferencing.aspx).

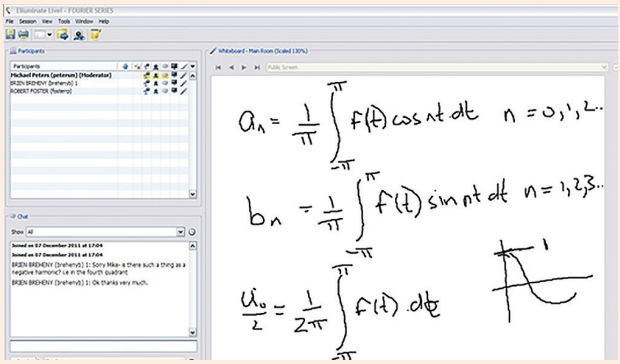

Figure 2 - Screen shot of Elluminate

Unlike a series of lectures, the topics to be covered are decided by the learners themselves. This enables a focused approach which directly addresses their needs. It also means that the content is not restricted, and topics that need to be refreshed can be identified.

A major challenge with web-based resources is the need to display mathematics correctly. Fortunately, Elluminate enables a tutor to attach a graphics tablet so that the tutor can write directly on to the whiteboard (Figure 2). Learners are then able to follow the workings as if they were in a classroom on campus. There are several features of Elluminate which enable the students to enjoy an interactive learning experience, including chat and the ability to control the whiteboard. The chat feature is particularly useful since it enables the tutor to monitor any questions or concerns the learners have during the session and to answer them at a convenient point. With small groups, the audio and video capabilities of Elluminate enable a real time dialogue to occur, reminiscent of a classroom environment.

It has been difficult to arrange a mutually convenient time for the sessions in order to maximise attendance. In the end a compromise has been reached whereby the sessions are run after 5 pm. The students who cannot attend the live session can access the recordings.

One issue is that the sponsoring companies have very strict regulations concerning access to their intranets. Some of the company firewalls blocked Elluminate since it needed to download a .exe file in order to run. This meant that in many cases the learners were not able to access the session while at work. In all other respects the feedback given by the learners who participated in the sessions has been positive.

Elluminate has proved a useful learning technology for the foundation degree programmes. It has enabled mathematics support to be provided to learners irrespective of their geographical location. The intention is to develop its use and to further discuss with the employers some of the security concerns.

4.3 Using distance learning

Effective support for part-time students when they are off campus is crucial, and this inevitably involves elements of distance learning. The importance of this arguably increases for block delivery compared with day-release because of the longer periods that students are off campus. For some courses there is a move to shorter attendance blocks compensated for by greater reliance on distance learning materials. However, for many STEM subjects there are limits to this because of the importance of learning by use of equipment and laboratories, and of group project work.

Courses that are more firmly in the realm of distance learning, typically those offered by The Open University, may be more suitable for some STEM subjects than others. Distance learning is not

a core area of this guidance, but it is felt important to refer to Open University practice in terms of how it compares with on-campus delivery. This is based on contact with OU staff in mathematics.

The OU prides itself on the quality of its teaching material and obviously has a vast experience of delivering courses to part-time students. Good practice includes the following.

- Each student is assigned a personal tutor to cover each module. The personal tutor is usually allocated on a regional basis. Tutors provide support over the phone, by email and if necessary by face to face contact.
- Face to face contact is usually by means of scheduled regional tutorial meetings that may involve typically 20 students. These may be on an evening or a Saturday, and attendance is optional.
- Some modules have residential courses of 4-5 days embedded within them. This is particularly the case where the module includes laboratory work that can be carried out during the residential time.
- As an alternative to the tutorial sessions day schools may also be offered.
- Electronic tutorials are also offered on pre-announced dates.

Students attracted to distance learning, and particularly The Open University are typically people looking for a career change, studying out of personal interest or "dipping their toe" into Higher Education without making too much commitment. Retention of students is generally low, particularly amongst young students. This is thought to be due to work and family commitments, changes in career, funding difficulties, and lack of motivation. Comparing distance learning with on-campus part-time delivery at a very general level, it is felt that distance learning has advantages in terms of flexibility for balancing work and family commitments, whereas attending a course on-campus can have a positive effect on motivation. Lee et al. (2010), also in the context of mathematics, consider that 'those who do not wish to pursue the OU route often cite isolation and the need for self-discipline as barriers to enrolment. The obvious alternative would be regular attendance in a traditional classroom setting.'

5. Using opportunities

5.1 Contributions by part-time students

As discussed in previous sections, part-time students who work in professions relating to their course tend to have significant practical experience. They can see where their studies are taking them in career terms and are able to apply workplace skills and motivation to their studies. There should be benefits if some of these experiences and attitudes are shared with full-time students, especially by allowing the latter to acquire more knowledge of the profession, more understanding of how what they learn at university might be applied in the real world, and greater appreciation of the types of skills and attitudes that could make them more successful students.

With appropriate arrangements, especially if they are made early in the course, this type of contact with part-time students can enhance the experience of full-time students.

Here is one such initiative. Part-time civil engineering students at Coventry University gain 20 CATS credits by engaging with a scheme entitled 'Contact with Practice' (Davis and Davies, 2008). They are required to organise events to pass on their industry knowledge and contacts to full-time students and, in doing so, earn 'CP credits' (Example 5).

Example 5

Coventry University civil engineering (part-time)

CP credits

Full-time students at Coventry take 10 credits each year in the form of University-wide employability (Add+Vantage) modules. Part-time students are exempt. In place of these modules, part-time civil engineering students gain the extra credits they need in the form of **Contact with Practice (CP) credits**.

To earn CP credits, 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 civil engineering profession – a contact with practice.

There are three objectives:

1. To provide a basis for awarding credit to part-time students in place of Add+Vantage modules.

2. To engage part-time students in reflective practice and personal development, and allow them to achieve Institution of Civil Engineers Development Objectives.

3. To create a mechanism to enable full-time students to benefit from the industry knowledge and contacts possessed by part-time students.

The most likely forms of event or experience are as follows.

- A **workplace visit** - most probably a construction site or design office - for about 10 students. A site visit would be led by the part-time student, and a design office visit would include some form of introductory presentation by the host part-time student.
- Acting as a **mentor** for full-time students, meeting periodically to share ideas about the profession and the course, and provide an insight into life in the industry.
- Contributing to a **taught module** or project. For example, a part-time student who works in drainage design could present aspects of their current job in a module on Hydraulics.
- A **poster** or **on-line presentation** on a relevant project that the part-time student has had significant involvement with. The poster / presentation needs to be rich in technical detail that demonstrates to full-time students application of knowledge in a practical context. It must be designed to engage a full-time student and be self-explanatory. The poster is displayed for all students; the presentation is hosted on the VLE.

In outline there are 3 stages:

1. Proposing one of the options above, and having that proposal approved.

2. Planning and implementing the proposal.

3. Recording the achievement in the format of the Institution of Civil Engineers (ICE) Development Objectives.

The relevant ICE Development Objectives are:

C3 Support other individuals' training and development

D1 Communicate with others at all levels (presentations, exchange of information)

D2 Demonstrate personal and social skills (awareness of the needs and concerns of others, set an example for others to follow)

E1 Promotion of the construction industry

Mentoring has been part of the CP credits scheme since 2010/11. By giving first year students the opportunity to have structured contact with practising professionals close in age and outlook to themselves, the aim is to harness the knowledge and experience of the part-timers in order to enhance the full-time students' awareness of the civil engineering profession and of the skills required for success (Davies, 2011). It aims also to help first year students to see where their studies are leading, to allay fears that they know little about the civil engineering profession, to ease the transition to engineering studies, and to give them contact with fellow students whose skills, attitudes and motivation have increased their chances of success on the course.

One further objective is to provide professional skills development to part-time students, who are free to choose mentoring from the range of options for achieving CP credits. The mentoring scheme is presented in more detail as Example 6.

Example 6

Coventry University civil engineering (part-time)

Mentoring

Part-time students interested in becoming mentors are given training and support materials. Full-time first year students who are interested in being mentored are identified. In the first year of operation (2010/11) groups were formed containing 2 mentors and 4 to 5 mentees. They met about 6 times during the year (4 times in term 1 and twice in term 2). Typically they discussed work in the industry and also the course.

This is a credit-bearing activity for the part-time students. Assessment takes two forms. One is based on level of participation in the scheme, evidenced by submission of records of the meetings and attendance notes. The other is a brief reflective record in the format of the ICE Development Objectives (see Example 5).

Peer mentoring schemes are quite common on university courses. Industry mentors are also a feature on some vocational courses. The scheme described here has the potential to combine the best of both these approaches by giving first year students contact with a practising professional who is also a student on their course.

Evaluation

At the end of the first year the scheme was evaluated. Separate meetings were held with the mentors (12) and a sample of mentees (5). In both cases, the students completed individual questionnaires and then took part in a facilitated discussion of the scheme.

The questionnaire responses from mentees about whether the scheme was a good idea, and whether it had lived up to expectations, were unanimously positive.

> *Was very interesting and informative; explained types of roles in the industry well.*

> *They were really enthusiastic about answering our questions.*

Responses to the question 'What do you think you got out of having a mentor?' included:

> *It broadened my understanding, whilst allowing me to see what actual professionals thought of a career in engineering. It helped me to confirm my choice of a future in engineering.*

It had been felt that mentors could provide an insight into both the industry and also the course. To determine the relative time spent on these topics, mentors were asked in the questionnaire to indicate the breakdown of time for topics at the meetings. All mentors discussed both their work and the course either 'some of the time' or 'most of the time'. For 10 (83%) of the mentors, work was the dominant topic, for 2 (17%) it was the course.

When mentors were asked in the questionnaire what they got out of the scheme themselves, there was some agreement that the experience improved professional skills, but this was not strongly felt. The same impression was given in the discussion. Most mentors derived personal satisfaction from the experience. Responses to 'What do you think you got out of being a mentor' in the questionnaire are generally positive.

> *Improved person skills with increased ability to share knowledge. Improved my own understanding of my personal development.*

The practice of using part-time students as mentors is being adopted at other universities: Nottingham Trent, London South Bank and Derby. Various new models are being developed including using part-time students to mentor full-time students while they prepare for a year-our work placement. At Coventry in 2011/12 in addition to the approach taken in 2010/11 part-time students also mentored full-time students in year 2 while they were engaged in realistic project work.

5.2 Opportunities for part-time students

Part-time study gives opportunities for career and personal development through the acquisition of understanding and skills and the gaining of an academic award needed for professional qualification.

These opportunities have been are explored in section 2.3 from an employer's perspective and will be presented in section 7 from a student's perspective. An example of a more specific opportunity is that of gaining a professional qualification as part of an academic course of study, as described below.

Embedded Technician Scheme

The University of Derby was the pioneer for a formalised approach to embedding technician membership into an academically based programme of part time study. The standard prerequisite for becoming a professionally qualified Engineering Technician (EngTech) and (in civil engineering) a Technician Member of the Institution of Civil Engineers (TMICE) is 3 years industry experience and the equivalent academic credits to an ordinary national certificate. Now a recent agreement with the Institution of Civil Engineers (ICE) has allowed students with 120 credits from an HNC or the first year of a foundation degree also to qualify.

At Derby a stage 2 module entitled Professional Development is utilised for the embedded technician scheme. The students work on their ICE Technician Professional Review (TPR) documents in class and produce draft reports as part of the coursework. Bespoke reviews have been held at the University of Derby during 2009, 2010 and 2011 a total of 22 candidates have been through the process with a 90% pass rate.

The overall benefits to students are that they:

- gain academic credit
- have greater awareness of the value of professional qualification
- produce CPD records
- undertake a Technician Professional Review very soon after gaining their academic qualification

There are some key requirements for making the scheme a success.

- Student support and sponsorship from employers is essential at an early stage
- Universities must have appropriate modules to adapt
- ICE needs to give positive support to any university/ college willing to adopt this model through the local ICE regional office and encourage student and employer support by offering bespoke and local TPRs at a suitable point in the academic year

At Wolverhampton, part-time civil engineering students take part in a similar scheme. They demonstrate that they have met the required development objectives, and produce a technical report as part of their Civil Engineering Skills module. In this way they have produced the required coursework to satisfy the module learning outcomes whilst at the same time are in a position to sit the EngTech professional review once they have completed their HNC. Full-time students register for the same module but take it separately and follow a more generic set of classes covering study skills, IT skills and communication skills. It is not possible for full-timers to work towards the EngTech qualification since they generally do not possess the necessary industrial experience. Taking the professional review is optional, but it is felt students benefit in any case from the exposure to the ICE and contact with the local ICE membership officer.

At Coventry, HNC (civil engineering) students can either engage with the embedded technician scheme and earn 10 credits for writing the documentation and preparing for the Technician Professional Review, or they can submit a more traditional project report based on analysis of an engineering problem at work.

6. Flexible approaches

We turn now to ways in which universities can demonstrate flexibility in satisfying the aspirations of potential part-time students, in providing employers with courses that are tailored to their needs, and in supporting opportunities for work-based learning.

6.1 Flexible response

We deal first with flexibility in response to the needs of potential students. Apart from young people simply progressing their education while working, potential students may include the following.

- Those with a skills gap which is a barrier to personal development or advancement, usually in a technical area
- Those with a specific learning requirement related to a new product, software system, code of practice or technological advancement
- Experienced professionals who wish to enhance their learning at HE level
- Individuals who have sub degree level qualifications and wish to top-up to bachelors level
- Experienced individuals currently in jobs that would normally require degree qualifications who wish to consolidate their position
- A range of late developers who have the drive to improve themselves by undertaking part time HE study (ranging in age from late twenties to over fifties)

At University of Derby (for example), some needs of this type are satisfied by Advanced University Diplomas, courses of 60 credits at levels 5 and 6. Compared with commercially available training courses, there is an advantage in taking a course of this type through a University because it will have had QAA involvement and is a validated and quality-assured qualification. The Advanced University Diploma in Civil Engineering Operations is a short part-time course at level 6 covering four modules: Advanced Engineering Mathematics, Civil Engineering Management, Geotechnics and Advanced Surveying. The modules are taken from the current civil engineering undergraduate curriculum. There are no specific entry requirements other than to demonstrate ability to engage at level 6; participants typically have HNC or military qualifications, and relevant industrial experience. This is a valuable gateway to HE learning and although there is no specific accreditation the course is highly relevant to working in the sector. The credits gained are transferable to other courses available part-time and the majority of award holders go on to study a BEng honours degree.

6.2 Tailored courses

We turn now to flexibility in response to the needs of employers. For any university, moving into delivery of courses that are highly tailored to employer need presents significant challenges and opportunities. Experiences at Aston University (foundation degrees in power engineering) are captured in this section and presented as general guidance. An example from the University of Derby is also presented.

The UK electrical power sector is facing extreme skill shortages particularly at technician and incorporated engineer level. In 2004, Aston University began discussions with two key power engineering utilities regarding level 4 and 5 provision, to support senior technicians and incorporated engineers working within the sector. A two-year, block release foundation degree in power engineering was developed and the first cohort graduated in the summer of 2007. This programme has experienced rapid growth with typically 80 to 100 new entrants each year, and 320 graduates to date across five different pathways. A progression route to BEng has also been established, with the first cohort graduating in July 2012. Feedback from both graduates and employers has been positive, with graduates experiencing rapid career progression and employers reporting high impact of the graduates to their operational business performance.

> *We are pleased with the content and delivery provided by Aston University and the continual improvements that they make in response to feedback from ourselves and our employees on the programme.*
> [National Grid]

> *The Scottish and Southern Energy Technical Staff Trainee Programme, which is run in partnership with Aston University since 2007, is seen by SSE businesses as a "critical partner" in delivering the engineering resources required to operate its networks and power stations.*
> [Scottish and Southern Energy]

A different approach

All universities try to ensure that vocational provision meets the needs of the industry it serves, with strong technical content, good currency and good fitness for purpose. Moving into tailored provision requires the university to move further in that direction. To be successful and supported by the industry, tailored programmes need to be absolutely based on employer need, such that the employers can expect graduates to make an immediate and significant impact on business performance, to reclaim the very considerable

investment in that individual. Some of the main issues with delivery of this type are as follows.

1. When a programme has the involvement of a number of employers, even in the same sector, business cultures may be very different, as may corporate priorities and training needs. The different expectations need to be resolved.
2. There needs to be a clear understanding from the outset that the university provides underpinning technical knowledge which will ultimately support the student's job function, but on-the-job competence itself needs to be developed independently.
3. The long-term sustainability of the programme needs to be carefully considered. During the euphoria of closing the deal, it is easy for promises to be made in terms of provision, which may ultimately prove unsustainable. In particular, care should be taken to match the delivery commitment as closely as possible to the skill-base of the existing university staff, as bought-in expertise tends to come at a high price for specialist industry-focused areas. On occasions, the required expertise may already be available within the employing organisation and staff may be released through the partnership agreement to deliver the material. Concerns relating to commercial sensitivity are often raised in relation to this type of arrangement, but such perceived risks rarely stand up to close scrutiny.
4. It is essential that the constitution of the working arrangements are clearly understood by all parties from the outset. The process of re-negotiating an inappropriate constitution further down the line can be very difficult.
5. Once the curriculum has been approved in the first instance, it will need to remain under virtually continuous review, as employers attempt to respond to dynamic changes in the market-place. For example, the generation sector is presently going through a very significant shift from traditional thermo-plant to large-scale renewables within very short timescales. The curriculum needs to reflect such transition.
6. Traditional university procedures are often inflexible and lack the dynamic response required by employers. Employers understand that tailored programmes are complex to manage and deliver and will be generally supportive when problems occur from time to time. However, they expect problems to be swiftly resolved (typically within 2 to 3 days).

Teaching

Delivery of tailored modules is challenging to the staff involved. One member of staff may continuously teach for several days, which requires an imaginative delivery style to maintain student engagement. Students on these programmes have a wide variety of backgrounds, both in terms of academic attainment and industrial experience. For the 2011 entry, the age profile ran from 19 to 55, with an average age of 27. Some candidates gained entry by means of their practical experience and may not have undertaken formal study for some years, while approximately 15% of the students had completed a science or engineering first or post-graduate degree in the previous five years. Delivering in a manner which engages with all groupings within the cohort can be challenging. One helpful feature is that much of the assessment is work-based.

Traditional university staff recruitment criteria are focused on ensuring the academic credibility of a candidate. Senior management of universities who commit to work-based delivery must understand the need to appoint staff who can also demonstrate industrial credibility.

A further example

A smaller scale example is provided by the University of Derby Advanced Diploma in Estimating for construction company Vinci. The university has taken a flexible and responsive approach to this course to satisfy the employer's need. It has run twice to date. The first time was for new employees. The university took the lead in recruitment, not only to the course but to the company itself.

The course consists of 60 credits: 30 credits of taught material (at level 6) on aspects of estimating and 30 credits for a work-based project. The work-based project is supervised by a company mentor and an academic supervisor from the university. The university provided a training day for mentors. Taught content was agreed in detail with Vinci. There was a tension between providing education at level 6 and training for new employees, but it was possible to create sufficient intellectual challenge. The employer understood that the academic level had to be maintained. Most delegates were graduates, or had completed studies at level 5.

Delivery has been designed to suit the situation. The first course was run in a 6-week continuous block. The second course - given to existing employees - was delivered in three separate one-week blocks with a four-week gap between each.

The main problem has been caused by a clash between work deadlines and course deadlines. Although the company are committed to the programme, the nature of estimating work means that delegates are not always able to free themselves from work deadlines when they also need time for coursework.

6.3 Work-based learning

Projects that are work-based have been referred to in section 3.5. Also significant elements of assessment in the tailored courses described in section 6.2 are work-based. Entirely work-based qualifications are exemplified by the Engineering Gateways initiative of the Engineering Council. This is a framework for gaining the qualification that a working engineer might be lacking in order to become professionally qualified. Most typically this would be an MSc, needed by the holder of a BEng qualification to complete the education to become Chartered, or a BSc/BEng, needed by the holder of a Foundation Degree or HND to become Incorporated.

> *This is a route to professional qualification for working engineers without the full exemplifying academic qualifications, who are interested in becoming professionally qualified and are unable to commit to full-time study. With the support of their employer, employees are able to demonstrate the required competences for professional registration (UK-SPEC) at the same time as meeting the learning outcomes for an academic qualification. … The engineering gateways framework provides a flexible work-based learning 'escalator' that allows progression to professional registration without the need to leave work, minimising the level of debt incurred and at the same time maximising employment and earnings prospects.*
> (Engineering Gateways, 2011)

A further development of this initiative has been funded by the National HE STEM Programme. 'The Engineering Council is leading a practice transfer partnership project to develop a toolkit that will enable further universities to offer engineering gateways type degrees.' (Engineering Gateways, 2011) Five universities are being supported in new work-based developments (Coventry, Derby, Greenwich, Leeds Metropolitan and West of England). Support comes in the form of advice from established providers (Aston, Kingston, Hertfordshire, Northumbria and Staffordshire) through meetings and mentoring arrangements. A toolkit has been created to support universities in developing this type of provision. 'The aim of the toolkit is to provide an easily accessible overview of the areas that require consideration when developing such degrees. Key resources are highlighted …' (Engineering Council, 2012)

A similar model has been used to provide graduates of the foundation degrees in power engineering at Aston (described in section 6.2) with a route to a full honours BEng degree. The programme consists of five modules and a work-based project with an expectation that students will require between 18 months and 2 years to complete. The programme is delivered in a blended form with Saturday tutorials at the start, middle and end of each module, augmented by VLE materials throughout. The first module is effectively a position audit of the candidates' existing skills and competences mapped against the requirements for Incorporated Engineer status. Deficiencies can be identified from this exercise, which allows an individual learning contract to be developed. Each student has an academic mentor, an industrial mentor and a professional mentor.

7. Student view

Part of the project has been the collection of views directly from students via an online questionnaire. Part-time students at the five collaborating institutions (Aston, Coventry, Derby, Nottingham Trent, Wolverhampton) were contacted by their programme manager (or the project collaborator) with a link to the survey, encouragement to take part, and participant information. The survey was completed anonymously and the name of the university was not requested. The aim was to identify which approaches to part-time delivery were considered by students to be effective and which not effective, and to collect ideas about encouraging more part-time study. Feedback on specific courses was not being sought and there was no intention to compare the responses for one institution with those for another. The questionnaire was deliberately kept simple. It simply asked for free text responses to three prompts:

1. Please name 3 aspects of your course that were well suited to the needs of part-time students

2. Please identify 3 aspects of your course that were a problem for part-time students

3. Please name 3 things that could be done (or changed) to encourage more students to study your course part-time

The responses provide a student view on part-time delivery, which can be compared with the intentions and assumptions of course teams.

The responses are collated below with an indication of the comparative level of consensus (among the 52 respondents). It is felt that this approach to the data adequately conveys the student view of the relative importance of the issues, but that more precise quantification is not justified. Responses have been grouped under the following headings.

- Contact/support
- Programme
- Timetable
- Other students
- Coursework
- Relevance
- Opportunity
- Challenges
- Promotion of courses

Contact/support

Two of the most common areas for comment in the entire survey are off-site communication with lecturers and VLE usage. Positive and negative comments are more or less in balance. Respondents consider the following are well suited to the needs of part-time students.

Off site communication with lecturers i.e. lecturers always available to speak on the phone and quickly respond to emails

[VLE] and remote access. These are very useful!

Yet others indicate that these same areas are a problem for part-time students.

Lack of appreciation from some lecturers that queries require response by email due to the opportunity of contact time being limited.

Some lecturers do not post all the information promptly online

These aspects are important because part-time students have limited access to lecturers while they are attending on campus because of the fullness of their timetable. Indeed, difficulty in gaining direct contact with lecturers outside classes was the most commonly cited problem of all.

Lack of opportunity to seek support

[Not enough] time to talk to lecturers out of lectures

These were counteracted by some positive comments.

[Good] availability of lecturers to suit with work schedule and limited time on campus

But on the subject of direct contact with lecturers, negative comments prevailed. And in spite of the potential for remote communication, students still value this direct contact.

Sometimes face to face contact is better

Some lecturers are very receptive of the requirements of part-time students (others not so much)!

Programme

Comments on programme structure were generally positive.

Module number per year (4 modules) is an acceptable amount for part-time students to complete

Flexibility of certain academic pre-requisites, e.g. students being out of full-time education for longer than 10 years, and offering the necessary support

Timetable

The most common of all the positive comments was that the timetable suited the needs of part-time students (at Aston, blocks of attendance, at the other institutions, day release).

Course based on one day a week attendance [suits the needs of part-time students]

Laboratory work is usually organised in a manner which fits the time required into the day of attendance for part-timers

However, perhaps confirming the importance of the timetable to part-time students, there were also many negative comments in this area. These particularly concerned last minute changes to the timetable, the timetabling of laboratory classes, gaps in the timetable during the attendance day, and occasions when attendance was expected outside the usual pattern. The problem relating to timetable about which there was most consensus was that the attendance day was tiring and heavily loaded.

The one day at university can be a very long day with so much to take in!

Study on a single day can be very intense when combined with a week at work

Other students

There were positive comments about the network formed with other students. These were mostly with other part-time students, but there were some positive comments about networking with full-time students.

Network with other part time and full time students forming support groups

The university encouraging working on projects with full-time students, a benefit to both parties

However, there were several negative comments about group work.

I work as part of a team every day at work, but working as part of a team at uni was so much more difficult. Not everyone is as dedicated as yourself and this makes things very difficult when you only see them one day a week.

There were some particularly negative comments about part-time and full-time students being required to work together in groups.

Forcing part-time students to work in (coursework) groups with full time students in order to share the part time students' experience is unfair / a complete hindrance.

Some comments implied a low opinion of some fellow students.

[Unhappy about the] amount of time spent listening to the same information being repeated for those who arrived late

Coursework

In this area positive comments prevailed and gave a clear picture of the preferences of part-time students.

Some assignments are able to be submitted online, this is very useful for part time students

You are given assignments early so you have ample time to prepare and write them while you carry on with your day job

There were negative comments requesting better coordination of hand-in dates and earlier availability of assignments.

Relevance

There were a number of positive comments on the relevance of course material to work.

[Course is] industry driven, industry recognised

Some modules are practically/industrially based and reflect real-life projects

Opportunity

There were positive comments about the opportunities created by part-time study. The students understood the importance of their course being professionally accredited.

Part-time education has created for me an opportunity to get a degree whilst being funded by my employer. I am gaining vital experience within the civil engineering industry at the same time as getting my academic base.

[Well suited to needs of part-time students:] course accredited by professional body

Challenges

A number of challenges for part-time students were identified. The most commonly stated was the time pressure created by the study work-load and the resulting competition for time between study, work and family.

I've found it tricky to do a group project on top of my dissertation in year 3. Work and family life have suffered more than usual

Sometimes the intensity of coursework for part-time students was difficult due to work/family commitments

Another challenge referred to by some is long travel distances to get to university.

Promotion of courses

Responses to the request for ideas to encourage more students to study part-time emphasised promotion and advertising of the benefits of part-time study particularly in terms of professional qualification. Several respondents felt that the accreditation of the course and the importance of professional qualifications were not sufficiently advertised or promoted.

I think publicity about the part-time courses is needed which also tells people about the benefits of it; it is generally [and mistakenly] accepted by most people that if you're going to university after college or sixth form for example that you've got to do it full time.

Accreditation is a big positive in favour of the course and should be highlighted

The other main thrust in this area was for employers to be better supported in providing part-time study opportunities.

Provide employers with incentives to send employees on part time courses

More employers need to employ staff on a day release training basis with clear progression from a draughtsman to engineer. The experience gained by working and the fact you are earning while learning are very good points, especially if employers also pay university fees.

There were several comments that closer links between universities and employers could be a means of encouraging more students to study part-time.

8. Challenges and increasing participation

8.1 Challenges and barriers

We deal first with general challenges, and then with particular challenges or barriers that may be perceived by those considering new part-time provision.

Student numbers

From the responses of the engineering employers interviewed as part of this project (section 2.3), the fee increases for part-time students are likely to lead to a slight but not serious reduction in student numbers (though this is dependent on employer type and size). In any case in most subjects part-time student numbers have already fallen in 2008-2011 as a result of general economic uncertainty.

Because the part-time timetable greatly constrains the full-time timetable where students are taught together (as discussed in section 3.4) there must be a point at which a part-time cohort becomes too low to justify the disruption. Examples of responses to this are now given.

Delivery has been adjusted on the part-time civil engineering courses at Nottingham Trent University (as described in section 3.4, example 3) to make the course sustainable with a relatively low intake.

Part-time courses in Chemistry at Nottingham Trent, which are aimed at people currently working within the chemistry-related industry and historically had good links with Boots plc (who regularly sponsored 12 – 15 students per year) now operate with only a handful of students in each year due to the downturn in industrial sponsorship. Part-time students are currently taught together with full-time students, and it is felt that to severely constrain the timetable for such small part-time numbers is becoming inappropriate. One possibility being considered is distance learning with one-week block release delivery.

At Coventry (civil engineering) most part-time students enter direct into year 2 (level 5). A relatively small number enter year 1 (the entry point for most full-time students). This has been felt to be a positive feature, potentially giving encouragement to school leavers with good A-levels to study part-time (whereas it is felt that entry via an HNC might be seen as less attractive - a 'vocational route' rather than the start of degree studies). The low numbers are made viable by alternating the first set of modules taken by new starters (between 1a and 1b on Figure 1), thus doubling the size of the part-time cohort at this level. (This is the approach used at level 5 at Nottingham Trent University, section 3.3, Example 3.) However, numbers of part-time students as a percentage of the whole cohort have dropped recently and the department has made the decision to close the year 1 part-time offering and divert part-time applicants seeking year 1 entry to the HNC.

NSS

Examples of challenges relating to the National Student Survey are drawn from Aston. Both final year Foundation Degree and BEng progression part-time students (power engineering) are eligible to enter the National Student Survey. Many practitioners in tailored and work-based provision are of the view that the standard NSS questions imply a negative bias towards work-based programmes (e.g. "I have been able to contact staff when I needed to"). Some tailored programmes have not scored well on the NSS. Any university which makes a transition into tailored provision has to accept a potential risk of NSS scores suffering a negative impact. Student perceptions are inevitably coloured by their experience in the work-place as well as the university. Clearly, the circumstances of the workplace are completely beyond the control of the university, but for example, a change in conditions in the work-place regarding for example time off to study, may seriously affect the student's response to the question, *"I have received sufficient advice and support with my studies".*

Staff involved in other, more standard, campus delivery courses with part-time routes can see that the NSS questions are not ideally worded for part-time students, but are not aware of these factors significantly diminishing their NSS scores.

New provision

It is natural for a department to be cautious about developing new part-time provision. What might they see as the main challenges?

Clearly mode of delivery and timetable are significant challenges. If part-time students are to be taught separately then this becomes an issue about resources and about selecting the most appropriate mode of delivery (as discussed in section 3.4). If part-time students are to be taught together with full-time students, thus potentially increasing efficiency and creating beneficial contact between part-time and full-time students, the challenge becomes the severe constraints on the timetable. Both part-time and full-time students will have times of the day or week when the timetable is packed, and this may be seen as affecting the quality of learning.

In certain circumstances the preparedness of students for HE study may be a challenge. This

may need to be overcome by the provision of bridging studies as described in section 3.1.

Fear that NSS scores might be adversely affected by new part-time provision, as discussed above, may also be seen as a challenge.

Of course it is worth overcoming these challenges if the benefits are sufficiently evident. One measure of benefits would be additional student numbers, and the issues here have been discussed above.

There are wider benefits in having part-time students in a department, and these have been discussed in sections 2.4 and 5.1. The students themselves benefit from their parallel experiences at work and at university. These benefits are strongest when the student's employment is closely aligned with the subject matter of the course. Arguably this is more pronounced in some subjects than others. Lee et al. (2010: p8) found that mature and part-time students of mathematics at Bolton had 'no expectation that their degree would include specific areas of work directly relevant to careers which involve the application of mathematics'.

The support of employers can help to overcome any challenges. Again, this may be more common in some subjects than others. It is also dependent on market circumstances, as already discussed. Another potential form of support is from professional bodies. The Institution of Civil Engineers has agreed to host a network for part-time providers in civil engineering, and it is hoped that this will act as a model for networks of part-time providers in other disciplines.

8.2 Increasing participation

As discussed in section 7, part-time students indicated in their questionnaire responses that they felt more students could be encouraged to study part-time if there was more emphasis on promotion and advertising of the benefits of part-time study particularly in terms of professional qualification. Several respondents felt that employers should be better supported in providing part-time study opportunities. There were several comments that closer links between universities and employers could be a means of encouraging more students to study part-time.

Employers clearly have an important role to play in increasing take-up of part-time study opportunities. As discussed in section 2.2 most current part-time students have chosen their area of work before choosing the subject of their degree. The decision to study needs some level of support from the employer. As employers have made clear in our interviews with them (section 2.3) they will continue to support part-time study by employees though they may be more selective in who they support, but this is influenced by economic outlook within particular sectors of the industry.

Mason and Hopkin (2011) have collected the views of employers on part-time study (not restricted to STEM), and found strong support for the combination of work experience and study experience by part-time students in the workforce. However they did not find employers necessarily to be the main instigators. 'In about seven out of ten workplaces, employers said that it was very often or quite often the case that employees initiated the idea of part-time study.' (p7) Employers felt that those 'who gain their qualifications by studying part-time while in employment tend to have superior skills and knowledge compared to new graduates or those who gain their qualifications on full-time courses'. They add that 'as a further vote of confidence in the merits of combining in-house experience with part-time study for HE qualifications, hardly any employers supporting part-time students were less in favour of doing so than they had been before providing support.' (p8)

It appears from our interviews with employers that at present, with (in many disciplines) plenty of good graduates looking for jobs, it is unlikely that employers would invest significantly in encouraging school-leavers with good A-levels to join their organisation and study for a degree part-time. We would argue that this is a missed opportunity because part-time students in the workforce benefit from a highly effective combination of learning and practice, providing employers with graduates whose skills they have helped to form. For school leavers with good A-levels part-time study would have attractions because it would create much lower levels of debt than full-time study, most probably no debt at all. It may be that for this route to be attractive to young people, and perhaps more importantly their parents and teachers, students should be able to enrol directly on to the first year of a degree rather than an HNC. Unfortunately, falling numbers of part-time students at present mean that these opportunities are being withdrawn rather than created (section 8.1).

More promising developments relate to apprenticeships. For example the Institution of Civil Engineers has promoted a package consisting of an Edexcel BTEC Level 3 Diploma in Construction and the Built Environment (Civil Engineering), providing the knowledge component, in conjunction with an Edexcel Level 3 Diploma in Civil Engineering for Technicians (Institution of Civil Engineers) (QCF), the competence component. This relates closely to a career route in which professional qualification as an Engineering Technician is achieved. Employers potentially have access to funds for training, which is an aspect of promoting part-time study highlighted by part-time students in our survey. Academically this could potentially lead to HNC and then degree, all studied part-time.

In another example, the University of Derby is involved with an initiative by Network Rail to contribute to filling a gap at technician level, providing training for people from age 17 to 20. The three-year programme aims to train 200

specially selected apprentices nationwide with the skills and experience to become maintenance engineering technicians. Network Rail state that they wish to develop chartered engineer status for selected participants, and will fund about 40 apprentices a year to further their education with a part-time HNC in engineering; they will then support the best of these to take foundation degrees, undergraduate degrees and further learning to reach chartered engineer status. Derby has been asked to develop aspects of bespoke provision for this initiative.

> *At school it was as if there were only two options – do A levels or go to college and then on to university, but I didn't really want to do either, particularly if I was going to get into a huge amount of debt. An apprenticeship appealed so much more and earning whilst learning was a real motivation. ... The HNC has been great and I want to go further and do the foundation degree and a degree in engineering - I don't want to stop here.*
> [Network Rail former apprentice now studying HNC]

As the editor of New Civil Engineer magazine pointed out in response to the fee rises for degree studies (14 April 2011) '… the future must be based on school leaver apprenticeship, industry funded training, industrial placements, scholarships and bursaries'.

Another method for promoting part-time studies is via professional body websites. The Institution of Civil Engineers has agreed to promote part-time study by featuring profiles of part-time students and graduates on the part of their website aimed at advertising opportunities to young people. This is being pursued and will then be used as an example for other professional bodies. It is hoped that this can encourage school leavers who could move straight to degree studies to consider the part-time option, to complement the more widely promoted apprenticeship opportunities.

9. Key points

Providing the opportunity for part-time study is a significant commitment for a department, with significant challenges and significant rewards. Course structures have to be specifically designed, timetables are severely constrained, and part-time students may require special support.

Yet part-time students are often outstanding students and have a very effective learning experience. They provide a role model for full-time students, and can be used to enhance the experience of full-timers by being used as mentors, for example. The presence of part-time students helps to define a department - it alters the relationship between academics, students, course content, and the profession.

The literature on part-time study tends to consist either of objective reviews of part-time provision in general or studies of the student experience on specific courses that concentrate on the challenges faced. The guidance in this document has been produced by enthusiasts for part-time education who want to promote part-time delivery, but at the same time point out (and help with) the challenges.

The **key points** relating to delivery, especially where consensus among the collaborators in this project is strongly supported by the views of the students, are as follows.

- Programme structure and timetable format should be determined with reference to whether part-time and full-time students are taught together, the stated preference of key employers, and most importantly with the aim of creating a realistic workload and attendance commitment for part-time students
- The chosen attendance pattern for part-time students must treated as an absolute constraint on the timetable
- Support for part-time students must be tailored to their real needs: easing time pressures through effective timetabling, providing flexibility, giving advice to those who have been away from study, and maintaining close contacts with employers
- Part-time students must have effective access to staff and course materials when they are off-campus
- Effective use of a VLE, beneficial for all students, is particularly valuable for part-time students
- Part-time students should be seen by course teams, and full-time students, as a resource
- Group project work when part-time and full-time students are required to work together must be set up carefully; an alternative approach to allowing full-time students to benefit from the experience of part-time students is via a mentoring scheme or equivalent
- Employers should be involved in course design and student support

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The National HE STEM Programme

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Working across the higher education sector in England and Wales, with a particular focus upon the disciplines of Chemistry, Engineering, Mathematics and Physics, the Programme supported higher education institutions in encouraging the exploration of new approaches to recruiting students and delivering programmes of study. It enabled the transfer of best practice across the higher education STEM sector, facilitated its wider adoption, and encouraged innovation. Through collaboration and shared working, the Programme focused upon sustainable activities to achieve longer-term impact within the higher education sector.

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