



# Employer-College Partnerships: Developing a Materials Foundation Degree

a Case Study from the UK Centre for Materials Education

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# Foreword

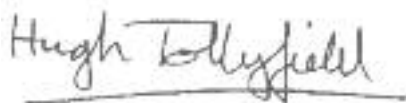
This is the second report in the series, published by the UK Centre for Materials Education (UKCME), this year, looking at the outcomes of its Supported Change Programme.

The decade since the Dearing Report has been characterised by a renewing of the engagement between employers and higher education. There has been a strong emphasis on ensuring that higher education graduates – studying for a wider range of qualifications, delivered in new and more accessible ways – possess the necessary skills and attributes for employment. Amongst these, Materials is a key discipline of critical importance to the economy, part of the Science, Technology, Engineering and Mathematics (STEM) grouping. Employers are playing a welcome and important role, which is having a significant impact on undergraduate and postgraduate education. The Leitch Report of 2006 provided an added impetus to this movement. Lord Leitch raised the key question of how higher education should build on its well-established relationships with business – in areas such as research, knowledge transfer, undergraduate and postgraduate education – to increase the number of people of all ages, in work and studying to achieve the high level knowledge and skills increasingly demanded of a world class workforce.

This report on the Foundation Degree programme delivered by the Metallurgy and Materials Section of Bradford College exemplifies just what can be achieved through committed and well-organised collaboration between academic staff, employers and employees. It shows that active involvement of employers in curriculum design and innovation in teaching to meet the needs of employed learners can be achieved without undermining quality and pedagogical integrity; and it is clear the added benefit is much higher levels of satisfaction and commitment from both employers and employees. The report does not gloss over the challenges still to be met, but the well-established collaborative relationships between Bradford College and employers in the metallurgy and materials industries have created an environment in which these can be met and overcome.

The report also highlights the important and highly positive role that can be played by a national Subject Centre working on a sustained basis with partner higher education providers. The sustained support that UKCME has provided to the development of the Bradford College programme, since 2001, is evidence of the very real benefits that can be achieved, both in the quality of teaching and learning and in the wider context in which they take place. The publication of this UKCME report, and others in the series, is very timely. It is very thorough and well-structured, and will provide a valuable resource in the spreading of good practice across the higher education sector – both for the insights it offers to those responsible for teaching specialist technical courses, and the more general lessons of interest to the rapidly growing community of academics engaged in working with employers.

Both UKCME and Bradford College are to be commended for this report, and I am sure that it will become one of the standard source documents for all concerned in making the most of the potential of UK higher education to be a central player in building and sustaining our economic future.



Hugh Tollyfield MloD

HEFCE Special Adviser on Employer Engagement

# Preface

In 2005, the Higher Education Academy emphasised the importance of pedagogical research (PedR) based in Subject Centres, by establishing PedR as one of its five primary areas of focus. In response, the UK Centre for Materials Education (UKCME) has established an annual, in-depth research programme; undertaking projects on behalf of the Materials community. The aim is to augment nationally determined issues and policy with a subject dimension. The third UKCME research project, PedR 3, has focused on employer engagement. More specifically, it considers the work of Bradford College in relation to its Foundation Degree in Metallurgy and Materials. It is this research which is featured here in the report.

This is not the first contact the Subject Centre has made with Bradford College. Since 2001, UKCME, eager to expand its profile into the FE sector, has been in active partnership with the Metallurgy and Materials Section to evolve practice through a series of Teaching Development Grants (TDGs) and a Supported Change Programme (SCP). Much of the work made possible by this support has formed the building blocks for the practices developed to promote employer engagement, which are featured in this report.



The professional body – the Institute of Materials, Minerals and Mining (IoM3) – has also played an important part; acting as a forum in which issues and practices relating to employer engagement can be discussed, and validating the Foundation Degree on which the PedR3 research is based.

However, it is the Metallurgy and Materials Section itself, and the employers who have engaged with it, who are the major players in this research. This report provides a case study of what they have achieved.



# National Policy and Practice

In 2000, Foundation Degrees were introduced by the Department of Education and Skills (DfES) as a mechanism to produce:

‘Graduates needed in the labour market to address shortfalls in particular skills. The aim was also to contribute to widening participation and lifelong learning, by encouraging participation by learners who may not previously have considered studying for a higher level qualification.’

(QAA 065, October 2004)

A further powerful force for change was introduced in 2003, with the setting up of 25 Sector Skills Councils (SSCs) – independent strategic UK-wide organisations – with a responsibility for skills and workforce development for all those employed in their particular sector. Each SSC is employer-led, actively involving trade unions, professional bodies and other key stakeholders. Their creation gives employers direct influence on training policy. Unlike the former National Training Organisations which they replace, and which had responsibility confined to apprenticeship training, SSCs can influence education and training at all levels, from apprenticeships to Masters degrees.

Their four key goals are to:

- Reduce skill gaps and shortages
- Improve productivity
- Increase opportunities for all individuals within the workforce
- Improve ‘learning supply’

(UKCME Sector Skills Councils, 29 November 2006)

Once again, there is a heavy emphasis on both enhancing the skills base of UK industry, and of promoting more active employer engagement in the education / training process.

The status of Foundation Degrees was significantly enhanced by the establishment of Foundation Degree Forward (Fdf), which was given its initial remit by the 2003 White Paper (January 2003) *The Future of Higher Education*. Fdf was ‘charged to develop a dedicated validation service for Foundation Degrees, and to act as a national centre for Foundation Degree expertise.’

Discharging this role involved working in partnership with all relevant agencies, including ‘liaising with SSCs and Professional Bodies to draw up Foundation Degrees covering a wide range of skills.’ (HEFCE Funding Letter 2006-07, dated 22 May 2006). Once again, the importance is emphasised of having training and evaluation ‘driven by the needs of employers and students’.





The process of strengthening partnerships to meet the needs of employers and employees was given a further boost in 2004, when Lord Leitch was asked by the Government to identify what would be 'the optimal skill mix' for 2020 to enable the nation to maximise economic growth, productivity and social inclusion, and to consider the level of change required. Leitch's report was published in 2006. Its analysis has been accepted, with a commitment to achieve the ambitions made public in the document *World Class Skills: Implementing the Leitch Report*. Again, there is an emphasis on forging links:

'Where appropriate, professional bodies will need to collaborate with SSCs and HE institutions to influence higher level provision... [with a need to] strengthen partnerships between these stakeholders.'

(World Class Skills, 2006; Para 3.60)

Key pointers were again emphasised by the Government in January 2008, relating here to HE institutions. Again, the importance was stressed of:

- Fostering closer ties between universities and industry
- Continuing to expand Foundation Degrees
- Making progress on flexible learning pathways
- Taking forward the work of widening participation in HE

(Grant Announcement 2008-09; Department for Innovation, Universities and Skills; 21 January 2008)

This is reinforced in the document *Higher Education at Work: High Skills, High Value* (Department for Innovation, Universities and Skills; 14 April 2008), which not only responds to Leitch, but also sets the Government's policy for high level skills – the skills associated with higher education. It highlights the breadth of the HE role in enabling and supporting economic growth, and notes the potential of the HE sector to form partnerships with employers, RDAs and SSCs to stimulate demand and supply the means of meeting it.



Finally, the implications for change have not been lost on the Higher Education Academy (HEA), with a programme initiated which involves providing support for Subject Centres to develop relationships and activity with SSCs and employers. An HEA communication (*Supporting funded projects relating to Employer Engagement*, dated January 2008) identified a number of actions which could be undertaken. These included having Subject Centres report and document tangible outcomes from projects relating to Employer Engagement. It is in response to this, that this case study report has been compiled.

# 2 The Industrial Context

Research for this report focused heavily on manufacturing industry, and more specifically on heavy engineering. Evidence was drawn from a total of 24 in-depth interviews held in 10 companies located in different English regions. Eight of the companies were part of a multi-national organisation; the remaining two operating on a small scale (i.e. were SMEs). Six were engaged directly in product manufacture; the other four focusing activity on metal processing (e.g. casting).

Details of the interview sample follow.

Eleven interviewees, termed 'students' in this report, were either currently studying for their Foundation Degree at Bradford College (five 'students'), or had completed the course and intended to build on this by gaining a BEng qualification (the other six 'students').

The remaining thirteen interviewees (eleven males, two females) held more senior positions in their company. Eight were either currently acting as work-place mentors to Bradford College students, or had undertaken this responsibility in the very recent past. The remaining five were senior managers. Two of this sub-sample had previously gained qualification by study at Bradford College.

The picture that emerged from these interviews was of an industrial sector under considerable pressure. This remains a time of change and challenge. The UK's heavy industrial base continues to shrink, with bulk processing and the mass

production of goods switching to other parts of the world, where costs are lower. This is a time where companies go out of business, or are taken over; a time of restructuring and reorganisation on a global scale. Small companies (SMEs) can be particularly vulnerable because often they are heavily reliant on 'one or two big customers'.

These negative messages are not lost on potential employees. As one senior industrialist explained:

**'This rapid decline in UK industrial engineering means that engineering is not seen as sexy. Metallurgy is a dying art out there.'**

As a result:

**'It is virtually impossible to recruit experienced, good people. We are all fishing from the same pool, and the pool is virtually dry.'**



However, all is not doom and gloom, as is reflected in the comments below:

**'Companies like ours have got to invest. You have to be at the cutting edge, one step ahead of the competition. We need to be fast on our feet, and bring in new ideas.'**

**'It goes beyond satisfying customers. It's in our interest to work with them. If they go down, we are also very vulnerable.'**

**'As a company, we have to take a chance on who we already have working for us; spot the potential and identify who can train to move us to the next level. I need somebody from this company who can help push up our level of expertise [in Metallurgy].'**

**'These are challenging times, but they do create real opportunities. For people with the right skills, prospects are enhanced on a global scale.'**

Companies who succeed, it is argued, will need to invest for the future to enable them to be proactive and a leader in the market-place. They will need to form new relationships with their customers.

Crucially, if the company is to remain buoyant, it will need to look to the workforce it already has, spot potential and invest in it, through training. There will be rewards also for employees who can gain the necessary expertise, for they are in a position to seize the career opportunities being created.

Here, the employers connecting with this research are endorsing current government thinking. The key lies in training; in developing in individual employees the particular expertise needed to push the company forward.

This research also revealed what employers were looking to gain from such training.



## Training: the Employer Requirements

There was some variation in what companies were seeking. Relevance was defined in a number of ways. In some cases, the emphasis was on producing a more capable employee with regard to management and communication skills. In other cases, the importance was stressed of improving technical knowledge and skill.

What employers did have in common was they sought training which would enhance employees' understanding of the relevant theory. What they wanted were colleagues better equipped to apply theory more effectively to the day-to-day work experience. Such training, employers were convinced, would make employees better at their job.

The research revealed that employers do appreciate, that given the highly specialised nature of the work their company undertakes, it will not be possible for any provider to develop a course content which was fully congruent with needs. However, although each company could not have exactly what it wanted, employers stressed that it was important that they had some say!

# 3 The Bradford College Context

This report tells the reader how one institution, Bradford College, has responded successfully to meet the expectations defined above. It focuses on the work of the Metallurgy and Materials Section at the College, and shows how practices associated with the development and delivery of a Foundation Degree can:

- **Foster effective collaborative partnerships to give employers real influence over training provision**
- **Promote widening participation, by offering high quality training and education for students who remain in full-time education**
- **Establish pathways to enable students to build up their qualifications**
- **Deliver a range of benefits to employers and their companies.**

This report is about excellent practice, and clearly there are messages here which are relevant to any institution which is seeking to foster employer engagement through Foundation Degrees.

It also shows how a national Subject Centre, in this case the UK Centre for Materials Education (UKCME), can play an active role in facilitating such developments.



It is important to stress that the practices featured in this report have not emerged suddenly (see Table opposite). They build on the experience and expertise of colleagues in the Metallurgy and Materials Section at Bradford College, who have engaged in active partnership with UKCME through a series of Teaching Development Grants, and more recently by direct involvement in a Supported Change Programme. Successful funding, through a targeted 'HE in FE' theme of the JISC e-Learning Capital Programme, provides a further opportunity for the Metallurgy and Materials Section to develop good practice in relation to Foundation Degrees.





The 'journey' undertaken by the Metallurgy & Materials Section is represented below:

Date	Funding Mechanism	Activity
2001	UKCME Teaching Development Grant 1: 'Use of APL in Materials for the HE in FE sector'	<b>Produced robust APL processes</b> (in terms of a mechanism and a framework for staff and students) in relation to the recognition, assessment and implementation of prior learning experiences in the HE in FE sector.
2003	UKCME Teaching Development Grant 2: 'Work-Based Learning in the Workplace: Emerging Practices in Materials'	Evolved excellent practice in the <b>use of the workplace as a learning environment</b> , and developed opportunities in the Materials discipline for academic study through Work-Based Learning (WBL) in the HE in FE sector.
2005	UKCME Supported Change Programme, Phase 1: 'Development of a Foundation Degree in Materials'	Enhanced <b>mechanisms for collaboration with a range of Materials-based employers</b> , and developed technical content, <b>for a new Foundation Degree</b> in Metallurgy and Materials.  Building on the outcomes of the above Teaching Development Grants, incorporated successfully both APL and WBL modules as curriculum elements in the new Foundation Degree, which was validated by IoM3 (the professional body).
2007	UKCME evaluation of Employer Engagement activities in Materials	<b>Evaluated the quality</b> of employer engagement and the student learning experience in Materials programmes provided by Bradford College.
2007	JISC 'HE in FE' project: 'SPACE-FD: Supporting Personalised And Collaborative E-learning: in Foundation Degrees'	Developing a personalised learning experience (PLE) <b>within selected Foundation Degrees</b> across the HE in FE sector, to facilitate effective sharing of ideas and best practice between College tutors, work-based mentors and students through e-learning.
2008	UKCME Supported Change Programme, Phase 2: 'Developing additional Foundation Degrees in Materials'	<b>Developing additional Foundation Degrees</b> for the Materials discipline, in the areas of (i) Powder Metallurgy, (ii) Packaging Technology, and (iii) Casting Technology – through active collaboration with UKCME, to be based on preceding work.

# 4 Establishing the Foundation Degree

Certainly, Foundation Degrees are being actively promoted by the Government, with powerful agencies in place to facilitate their implementation. However, uptake requires more than this. Foundation Degrees will also need to gain credibility. They will need to satisfy a number of criteria. Crucial to this is that they are regarded as relevant by potential participants (employers and students).

A great deal about how this has been achieved can be learned from the messages to emerge from the Teaching Development Grants, and the Supported Change Programme, funded by UKCME at Bradford College (see previous table). Establishing a 'relevant' Foundation Degree takes a great deal of time. It is a social process, involving visiting and talking with employers in a variety of settings. It involves gaining a fuller understanding of employer and learner needs, and an appreciation of the context in which they are operating; its challenges, demands, constraints, and so on. It involves also convincing employers that staff at the College have the appropriate experience and necessary knowledge to deliver learning experiences which will meet industry and learner needs.

To put in place appropriate practices and a relevant content for its Foundation Degree has required College staff to show both flexibility and empathy. As will be seen throughout the remainder of this report, it is these two characteristics which have defined the College approach.

The Foundation Degree featured in this report was introduced in September 2005, and subsequently validated by the professional body – the Institute of Materials, Minerals and Mining (IoM3) – in March 2007.

It is clear from this research that employers have been highly appreciative of the approach adopted by Bradford College. This sensitivity to meeting particular needs is illustrated below:

**'[The College were] listening to our point of view, and as a result, did build in an element of a module which we would find especially valuable.'**

Such responsiveness is especially valued by colleagues working in SMEs 'who do not normally get the chance to influence training courses.'

Clearly, employers have valued the fact that Bradford College will listen to suggestions as to what might be incorporated into the course. However, there appears to be no powerful drive on their part to interfere with the detail of the content. Provided the course (its core and options) is perceived as relevant to company needs, employers are happy 'to let the College get on with it'.

In addition, gaining accreditation from IoM3 represented a big step forward. Because of the partnership with IoM3, employers had 'gained confidence' that the course at Bradford College was 'moving in the right direction'.

# 5:1a The Learners

The students who have embarked on the Foundation Degree form a diverse population. They differ markedly in both age, and in the career path they have followed to get to their current positions. Some are currently at the apprentice stage, having entered industry either directly from school, or having dropped out of university study. Others have made their way through the ranks, and are now holding posts of some responsibility: Senior Lab Technologist, Company Metallurgist, Quality Engineer, and so on. Some have switched interests, seeking new knowledge. Others have sought a career change. Still others have had change forced on them through redundancy, or a shift in personal circumstances. This diversity is illustrated in the examples below.

What the students do have in common, however, is a conviction that the way forward for them involves investing their time and effort in further education and training. All have connected with Bradford College to do so by studying for their Foundation Degree.

## Student A

Student A is male and fifty years old, with a grown-up family. He currently works for a multi-national company manufacturing engine components to a high degree of precision. He joined the company more than ten years ago, and initially engaged in temporary employment, doing shift-work on the shop-floor for 'good money with little input'. The work was 'mindless and soul-destroying' and, six years ago, Student A decided on a career change. A decision was made to take a pay cut, and to move into the Materials Lab 'for a better quality of job during normal hours of work.' Initially, the work was 'little more than gophering', but the career change brought with it an expectation that Student A would embark on training...

Bradford College was the only college providing appropriate Metallurgy and Materials courses to meet the training needs of Student A, and offering the option of part-time study. Initially, training was at National Certificate Level, with Student A progressing successfully to complete an HND. This led to two years further study towards a Foundation Degree. Again, this was undertaken through day-release.



## Student B



Student B is female and in her early twenties. She left university during Year 1 of the course 'to look for something more practically-based.' Four years ago, she began an apprenticeship as a trainee Metallurgist, as part of a company-structured programme of training. The company, a multi-national operation, is engaged in metals casting for heavy engineering.

Student B was able to incorporate into her company training, study for a National Certificate at Bradford College, and to do this through distance learning. This provided a springboard for study on the Foundation Degree. Currently, Student B is on the first year of the course, again undertaken through distance learning.

## Student C

Student C is male and in his late 20s. For personal reasons he dropped out of university study. He joined his present company five years ago, his previous employer having gone out of business.

For the last two years he has been a Quality Engineer liaising with clients to ensure company products are engineered to the required specifications. The company is a multi-national organisation manufacturing oil-drilling platforms.

Student C was already undertaking study (initially an HNC) with Bradford College before joining his present employer. College support, and the opportunity to transfer to a distance learning mode, enabled him to continue with his studies. More recently, Student C has been able to complete 'top-up elements' from the Foundation Degree course; bridging modules to prepare for study on the BEng course, again at Bradford College.





## Students D and E

Students D (female) and E (male) are both in their early twenties, and are employed by a multi-national car manufacturer. The former is an engineering technician apprentice in her third year of training. The latter is an apprentice currently working in the Materials Lab.

Both students are engaged in company apprentice schemes, and have completed study for National Certificates in Mechanical Engineering at a local college. They have sought a switch to a more Materials-specific focus and, following a recommendation by a company colleague, and the successful completion of bridging modules through distance learning, are now undertaking the first year of study for a Foundation Degree at Bradford College through day-release.



## Student F

Student F is now in his 40's, and has over 15 years work experience 'in the heat treatment industry'. He works for a SME which manufactures heat exchangers 'for a wide range of industrial uses', and joined this company four years ago. Currently, his work focuses on technical sales, with time divided equally 'between the office and the road'.

Bradford College was highly recommended to Student F by his line manager; himself a former student of the College. As a consequence, he embarked on a Foundation Degree, initially through day-release. However, drastic changes in personal and work circumstances mean that this course of action is no longer tenable. Negotiations with Bradford College have resulted in a switch to a distance learning mode of study.



These brief descriptions clearly illustrate that this Foundation Degree is providing a way forward for a range and variety of people currently engaged in full-time employment, in some cases enabling them to build on previous study with the College.

Clearly these students have proved willing to invest effort and time to progress their own development. For this, they and their employers have looked to Bradford College. The remainder of this report tells us why.

# 6 Responding to Learner Needs: The Accreditation of Prior Learning

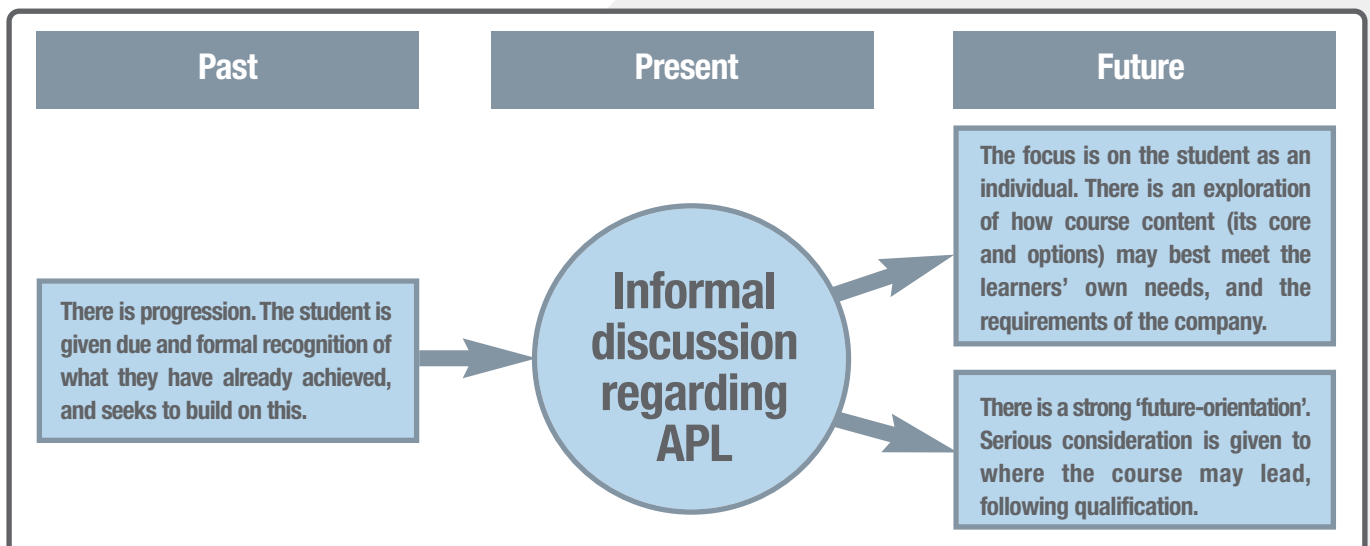
The importance has already been stressed of making the learning experience as relevant as possible for both employers and students. This means that the College staff must adopt practices which enable them to both listen to participants, and to respond flexibly to what they hear. An important element of this involves actively engaging with potential participants in a process of Accreditation of Prior Learning (APL). A Teaching Development Grant provided by UKCME has enabled the Section at Bradford College to explore and establish its practices in relation to this.

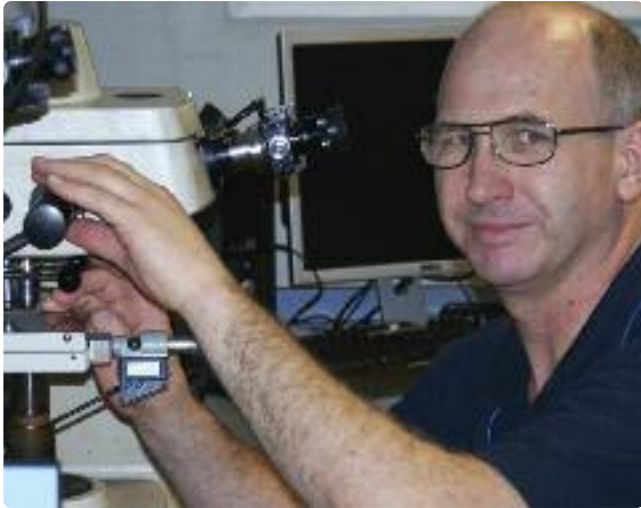
An informal meeting identifies and audits the prior knowledge and experience individual students bring with them, to the course. This gives students credit for prior study and work, and exemption from particular elements of the course, where appropriate.

The research confirmed that the practices relating to APL had helped to ease the transition into study, especially for those who had had a considerable gap in their education and training.

This process has a number of important features:

- It emphasises progression. It looks back to the past, and it considers the future, as is represented in the diagram below:
- It considers the suitability of the workplace as a context for learning. A number of questions can be asked, as below:
  - Who will be the workplace mentor?
  - To what extent can time be devoted to study, given current work commitments?
  - What is the quality of learning support in the workplace in relation to resources, availability of guidance and support?
- It establishes a supportive working relationship between the student and College.





The research reveals also that these Bridging Modules provide students with a strong incentive to continue studying and to progress their learning, as is explained below:

**'There is strong motivation [to complete the Bridging Modules] because you realise they are leading you to something: the Foundation Degree.'**

The drive to meet student needs has also led the College to offer learners options in terms of how they study. Practices in relation to one approach, day-release, are considered next.

## Bridging Modules

A measure of the commitment of the College to meeting individual learner needs, and to promoting progression, can be seen in the development of Bridging Modules. These modules:

- provide a content which 'fills knowledge gaps' (e.g. in the Materials subject) and 'forges connections with the higher level [Foundation Degree] course.'
- include assignments, with assessment undertaken formatively to 'support and lead the student towards understanding the topic.'
- offer learners a 'mixed-mode of study' being presented in a distance learner format, but supplemented by active College support.

These modules are valued because they promote a relatively seamless progression; enabling individual students to move from Certificate level study to that required of the Foundation Degree.





# 7 Learning at the College: The Day-Release Mode

**'It is difficult for anyone leaving school, getting set up in a job, and then deciding they need to go back to learn. It is not like you are continuing your education. You have got to alter your mind-set, and this is quite difficult for a lot of people. You have to set aside time to do it. It is a struggle. Work is very demanding, and you have to fit study in with wives and families.'**

Again, the initial focus falls on the learners themselves. The comment above encapsulates the challenges faced by many students who engage in study through day-release. Older colleagues may have to regain the habits of college learning. They must find time for study within a demanding 'programme' of work, social and family commitments.

One interviewee describes his experiences of embarking on day-release, after a long gap in formal education:

**'It can be difficult being an older guy among a group of young apprentices...You have to work harder at your learning...It took me a few months to get into the mode of learning. You have to get over the first difficult hurdle.'**

There are other demands to be met. Day-release represents a long and intensive day's work at the College. The student below relates to this:

**'I had to leave home at about 6.00 am to miss the early morning traffic, to be at Bradford College for the 12 hours of day-release classes, and then I got back home late in the evening.'**

In a number of cases, students were making long and tedious journeys to attend the course. This can involve giving up part of the weekend or setting off very early. In most cases, students get home late, and face an early start for work the following morning.

The comments from these interviews tell us a great deal about the students who engage in day-release; about their commitment to study; about their resilience; and about their determination and drive to overcome difficulties and barriers.

The comments also tell us a great deal about provision on offer at the College. Students would not be able to sustain the high level of motivation needed to complete the course successfully unless the learning experiences on offer were not of a high quality.

Inevitably, there will be some variation, but the Metallurgy and Materials Section 'has to do a lot of things right, if it is to keep the students coming back'. It is on the things that the College is doing right that attention now falls.

# 8: Doing Things Right (1): A Content that is Relevant

To be successful, a Foundation Degree must have a content which meets the needs of both employers and students.

A number of factors combine at Bradford College to ensure such relevance is achieved. Two of which are considered below:

## There is Nothing of the 'Ivory Tower'

Certainly, the content and delivery of the Foundation Degree cannot afford to stray too far from industrial reality:

**'The Course Leader has a strong background in industry. There is nothing of the ivory-tower attitude. Staff, in the main are down-to-earth. There is a strong practical, industrial orientation, rather than a very heavy academic emphasis, even from staff who may lack a depth of industrial experience.'**

It is clear from this research that a strong empathy is built up between students and the staff at the College. This is because some lecturers, most especially the Course Leader, are able to bring their own industrial background into the learning experience. They engage directly with the learner. Although the course must build a theoretical underpinning, content is not allowed to become esoteric and detached from the world of industry. There is nothing of the 'ivory tower' in the learning experience on offer.



## Strategies to Ensure a Relevant Content

Having teaching staff with the appropriate experience and expertise is clearly very important, but is not enough to ensure content is relevant.

A number of strategies are needed (see Table opposite) which will inform what is on offer, and how it is delivered. Some of these will be informal and operate on an ad hoc basis. Others are built into formal educational practice at the College.

Adopting these strategies, involves staff at the College taking time to build collaborative partnerships with its stakeholders. As a result, it gets feedback and intelligence from students and employers directly involved with the Foundation Degree. Other mechanisms enable College staff to learn from national agencies in which there is employer engagement.

## Strategies to Ensure a Relevant Content

Partner	Strategy
Student	The initial meeting with each student, primarily to consider APL, also provides staff with an opportunity to learn about the individual context in which the learner works, and to build up a picture of his/her specific learning needs.
Student	A dialogue is maintained with learners throughout the course. Students can provide feedback and help shape the content of both compulsory (core) modules and those selected as additional elements for study. Staff are committed to extending the range of additional modules to meet students' particular needs.
Individual Employers	Visits are made by Bradford College staff to the student's place of work. These visits are to gauge progress and assess students' work. However, they also provide opportunities for the College staff to familiarise themselves further with the issues and problems faced in industry, and to learn how course content may evolve to address these more effectively.
Professional Bodies	Regular meeting through the auspices of the IoM3 enable the Course Leader to work alongside industrialists to inform course content and practice.
Professional Bodies	Accreditation meetings, at the College, to which both industrialists and representatives from IoM3 are invited, provide a further opportunity to discuss the relevance of what is currently on offer.
Sector Skills Councils / Foundation Degree Forward	Attending regular meetings enables the Course Leader to work alongside industrialists to inform course content and practice.

The commitment to providing courses relevant to industry can be seen in the ongoing work at Bradford College. The Supported Change Programme, funded by UKCME, is creating opportunities to extend the range of Foundation Degree courses on offer to meet the needs of particular sectors of industry.

This commitment to relevance can also be seen in the learning experiences on offer, and much that was excellent has been affirmed in the UKCME research for this report. One important feature which must be stressed relates to the way College staff are operating, and this has been included here, and features in the next section.

# Doing Things Right (2): A Flexible and Responsive Staff

Foundation Degrees make particular demands on teaching staff. For some students, there has been a long gap since they were engaged in formal education. For all students, studies have got to be located in a busy life of work and family responsibility. Inevitably, problems will arise, and solutions will have to be found if participation on the course is not to be de-railed. There are a number of circumstances which test the capacity of College staff to solve problems. These are considered below:

## Addressing Individual Concerns and Learning Needs

'I was finding it tough. I hadn't done it for so long, and was trying to get back into it. It was quite useful to have someone at the College, to show me different ways of doing things.'

'Best of all, if you are on day-release, you can always go along and make personal contact. There is nothing as good as that. Invariably, you can pop in and talk with [named colleague]. He always finds time. Nothing seems like too much trouble. You can talk through the problem, something you don't understand; he will find a way of explaining it, or direct you to somewhere to get help.'

'I was directed to particular sources of reading... attempting assignments and getting feedback, with pointers where I had gone wrong and could make improvements. Then I re-submitted and got further feedback, and then, ultimately, a grade.'

From the research, College staff are 'always there' for the students, at the end of a phone line 'at any time'. They always provide support and help; showing those who are finding it tough 'different ways of doing things.'

Students particularly valued the face-to-face contact when facing problems, the chance to 'pop in and talk.' Again, staff 'always found time' and invariably came up with solutions.

A more specific example of staff support is found in the final comment in relation to undertaking an assignment. Here, a formative approach had been adopted providing feedback and 'pointers for improvement' before a final submission was made.





## Responding to Changing Circumstances

The research provided ample evidence that the College were sensitive to the demands made on students who were studying and in full-time employment. Crucially, they also appreciate that situations can change. What is clear is that College staff have proved both sensitive to learner needs, and willing to respond with extra support and offers of extensions, when necessary.

Cases were recorded where adjustments had been made for students who had found it difficult to meet the higher demands of the Foundation Degree, after completing their National Certificate. Perhaps the most vivid illustration of the College's flexibility and responsiveness is provided in the brief case study featured below:

### One student describes his situation:

**'Initially it was pencilled in when I would finish my degree. But, life changes. The course I entered was flexible. That was why I chose the course. So, the pencilled date is not hard and fast.'**

**This student had a 'big push at work', and personal circumstances had changed (the family had moved home, and there had been family sickness):**

**'As a result, I had to step back from the College. Now, I have had a meeting with staff, to get things back on track. With their full support, it is going to work out. I will be able to take the study forward. The beauty of Bradford College is it is flexible. You can do as much as you can. It is there for the future.'**

Here, the student is reinforcing a crucial message. A primary reason for engaging on a Foundation Degree at Bradford College was the expectation that staff would respond to individual and changing circumstances, and find a solution to problems which would enable students to continue with their studies.

## Fitting in with Company Practices

Some students are also part of a structured company training scheme (e.g. apprenticeships). This brings with it its own strict timetable, rotations of work experience, and its own assessment and review process. The learning experience provided by Bradford College must operate within this context, and this brings implications and challenges.

Although mismatches do occur, the consensus was that the College responds effectively and responsively to issues such as:

- Promoting learning experiences commensurate with the demands of current company placements
- Fitting in with timescales imposed by company practice
- Ensuring assessment requirements do not differ markedly from the norms of company reporting practice.

In the following section of this report, attention switches from the day-release mode to study through distance learning.

# 10: The Distance Learning Option



The Metallurgy and Materials Section at Bradford College is strongly committed to augmenting its day-release programme by offering students opportunities to undertake study based on a 'distance learning approach', and has been able to use funding from the Supported Change Programme to initiate this.

It is clear from this research that the distance learning mode is the preferred option for many employers when seeking to skill their workforce. Having colleagues further their studies through distance learning proves particularly popular, if they have already assumed some responsibility within the company, or have gained valued expertise. This is especially so, if the learner is employed in a small organisation (SME).

In some cases, employers talked of switching to a distance learning mode, once the colleague had 'made the first steps forward through day-release.'

While the distance learning approach may release students from the demands of travel, it clearly brings its own challenges.

College staff have to provide an adequate substitute for the teacher 'explaining things directly'. They must provide resources of such quality that students will be sufficiently stimulated to 'juggle their time'; create time for study, in addition to engaging in full-time employment.

Clearly, employers welcome the decision made by Bradford College to augment study through day-release, by developing a distance learning mode. This was seen as a further example of College staff responding to the needs of industry. The research also showed that some employers have clear notions of what should be the characteristics of such an approach.



## The Distance Learning Mode: Employer Perceptions

- Employers were convinced that this mode could provide a high quality learning experience to meet both company needs and those of individual employees.
- Distance learning through the use of e-technology could be used to develop competencies; 'by breaking content into small-sized elements'; and to promote understanding of difficult concepts; 'by providing alternative ways of visualising material.'
- This mode would give students a great deal of control over their own learning. Resources are always available, enabling individuals to access them and to engage in self-study at any time. Students can reinforce and refresh their learning by repeated visits to the material.
- E-learning resources developed by others, could be connected by the learner to the wealth of information available within the workplace, e.g. to the company Intranet.
- This approach, the distance learning mode, becomes more cost effective when the number of users increases.
- To facilitate employee engagement with e-learning, a number of companies are now investing in resources, including providing access within the workplace through the setting up of dedicated study areas (Learning Zones).
- Employers insist that e-learning cannot be a total replacement for training. Other experiences are needed, if knowledge and expertise is to be built. Opportunities must be provided to apply what is being learned in a variety of contexts.

In addition, distance learning:

'...cannot replace social learning, informal learning, learning from one another, learning from anecdotes and form the sharing of others' experiences.'

- Finally, employers have a number of messages for would-be developers:
  - It is important not to start the development process in isolation or adopt a pre-conceived notion of what is required, and how it should be developed.
  - It is essential to consult and collaborate with employers to 'ascertain what industry is looking for.'
  - There already exists a wealth of material provided by a variety of agencies. It is important, before development begins, to explore what is currently available and appraise this critically to gauge its suitability for use.
  - E-learning resources must be much more than a reproduction of printed materials, such as textbooks, lecture presentations, etc. It is essential to take 'full advantage of the technology' and to incorporate 'stimulating visual representations, through the use of animation, interactivity, etc.'

Two messages from the employers' perception are particularly pertinent:

- Distance learning resources must be much more than a reproduction of printed materials, such as textbooks, lecture presentations, etc.
- Distance learning cannot be a total replacement for training. Other experiences are needed, especially opportunities for social learning and a chance to apply knowledge in a variety of contexts.

It is clear that from this research that Bradford College still has a long way to go, if it is to develop resources with the appropriate characteristics. Staff at the College are fully aware of this, and with further support from UKCME, development of distance learning resources will continue.

In addition, there are social issues associated with distance learning, which are discussed below.



## Solitary Learning and the 'Big Leap': the Problem and Solutions

**'A major problem is that [named student] is on [his/her] own. There is nobody within miles doing the same thing to relate to [...]. Earlier, distance learning based on textbook and answer questions worked effectively, and [...] was able to complete four units a year. Now, using the same approach for the Foundation Degree, has proved a bigger struggle. It can be a big gulf from quite basic to the higher demands of a Foundation Degree. [...] is now going much slower, and can get dispirited, even wanting to give up. At the current rate, the degree could take five years, and that's a long haul.'**

Embarking on study through distance learning can be a lonely business, with students feeling isolated from others who are facing similar challenges. The shift from basic study (at Certificate level) to the greater demands of the Foundation Degree can prove difficult for some students to negotiate.

The distance learning approach developed by Bradford College appears to work very effectively in relation to the Certificate course and on Bridging Modules. However, it is not yet developed sufficiently to enable students to cope adequately with degree level work.

Staff at Bradford College are sensitive to the needs of the 'isolated' learner, and are developing a number of strategies to address these.



### Strategy 1: the blended approach

The College see a blended approach as the way forward. It is appreciated that students cannot learn in complete isolation; a programme of attendance for specific elements of the course is needed. The evidence from this research is that students who can combine distance learning with some College attendance are very positive about a 'mixed-economy' approach.

Work is now underway through the Supported Change Programme to translate this thinking into practice.

### Strategy 2: student workshops

A student workshop was held at the College in December 2006; being a collaboration between the College and UKCME, and sponsored by the Sector Skills Councils. This focused on the Work-Based Project, and was targeted at students studying by distance learning.

One student identified the positive impact this workshop had:

**'Simply going [to the Workshop] and talking to other students made me feel a lot more confident... It was the first time in four years that I had met other students from the College. We were all at different stages in our courses, but were all in the same boat doing the same sort of thing... It was good for me to see that things are a bit kinder here in this company. A few students said that they do not get a chance to do any of their study during work time. I realise that I am quite lucky here.'**



Simply attending the event had helped, and had increased the student's confidence. It had been a long time since he/she had met others, and it had proved beneficial to talk with students facing the same issues and problems. This interviewee also returned to the workplace with a fuller appreciation of the support the company was providing.

The success of this workshop has convinced the College of the need to run a similar event on an annual basis.

This section of the report has focused primarily on practices which are still evolving. In the next section, attention falls on a practice which has been fully established and refined.



# The Visits

## The Visits to the Company

One of the most significant educational strategies to be adopted by the Section involves staff from Bradford College visiting the workplace to meet with students, and other relevant 'industrial colleagues'. Normally, these visits take place twice a year. This research reveals that the large majority of interviewees were satisfied with current arrangements and practice relating to these meetings, and were pleased with the outcomes.

These visits are primarily about student development; about reviewing and assessing progress and performance, and for this, the College must take the lead in setting and sustaining the agenda. The visits, however, serve a number of other functions (see below). Not least, they reaffirm the message that the Section at Bradford College is not remote or removed from industrial reality. It is not an 'ivory tower'. The meetings tell employers that staff at the College want to listen and learn. The aim is thus to foster collaboration, build partnerships and to promote dialogue.

### Reviewing Student Progress

The visits ensure that all relevant parties are kept fully informed of the progress the student is making on the Foundation Degree, and in the light of this, they identify and determine what are the implications for the future.

There appears to be a special need to hold these reviews of progress in cases where students are also engaged in a company training scheme. In such cases, the review does not stand alone, but overlaps and feeds into the formal process of progress review operated by the company. It can also serve to inform and shape the on-the-job training planned by employers.



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## Clarifying and Reviewing the Current Course

Very considerable emphasis is being placed by the Section on connecting with industrial partners and on promoting dialogue. Two aspects of this are considered below:

- The visit provides staff from the Section with an opportunity to reaffirm what the Foundation Degree is all about; to clarify College expectations, requirements and regulations, and to make explicit the framework for the current degree course.
- In addition, a 'dialogue' is promoted to shape the course for the future, by encouraging all parties to explore actively how the course, (its core modules and optional elements), could be modified to enhance their relevance to industrial companies.

## Learning about the Company

These visits provide College staff with opportunities to gain direct access to a variety of real and specific industrial settings. As a result, staff gain, first hand, a fuller appreciation of the issues and challenges faced by manufacturing industry, along with an understanding of how companies are responding.

These visits have both a 'present' and 'future' orientation:

- For the present, the visits enable College staff to evaluate the company context to ascertain its capacity (through resources, staff commitment and capability, etc) to give the student the necessary support and guidance in relation to studying for the Foundation Degree.
- For the future, direct exposure to the industrial context enables College staff to explore what is available (specialist equipment, a particular practice or specific process) which could represent a resource to be incorporated into the College learning experience.

## Making Possible the Work-Based Project

It is at these visits that a crucial element of the students' learning experience, the Work-Based Project, begins its life, and receives its final assessment. The Work-Based Project is considered by the authors to be of such significance in the students' learning experience, that it will be given much more detailed consideration a little later in the report.

Before moving to the next part, however, it is important to point out that funding from UKCME through its Supported Change Programme has enabled the Section to expand its commitment to making these company visits; extending them to a range of industrialists not currently connected to the existing Foundation Degree. In part, this entails the appraisal of 'what is out there', providing possible further learning resources. Certainly, it enables the College to build up a bigger picture of what is currently happening in industry. Crucially, it also allows the College to negotiate with industrialists and with IoM3 to extend the range of Foundation Degrees which can be offered. This evolving tripartite collaboration is crucial to ensure that the strategy of enhancing and expanding current provision will be successful.

This part of the report has taken the reader into the workplace, by giving active consideration to the visits made to companies by College staff. It is in the company that the reader remains for the following parts, where an evaluation is provided of company support for the learner.

# 12 Learning

## Learning in the Company (1): Time and Resources

**'Everyone gets equal support from the College. Everything really depends on your own work environment.'**

To date, the focus has been on aspects of the learning experience determined primarily by the Section at Bradford College. The comment, above, reminds us however that a very great deal will also depend on the quality of support and guidance that the student receives from the workplace. In fact, this research reveals that employer investment goes beyond encouraging learners to engage on the Foundation Degree. In many cases, it involves providing significant and varied support to promote 'learning in the workplace'. There are a number of aspects to this.

### Giving Students Time

**'You can't predict the workload in here [named company] from one minute to the next. It is like a fire station. It can be quiet one minute, all hell breaks loose the next. We have agreed that, if it's quiet, the student can get on and do his College work.'**

In all but one of the companies visited, an understanding had been established that the student could use 'slack time' during the day to engage in his/her studies. Clearly, work demands come first, and things can change very rapidly! However, there is an appreciation here that the student can take responsibility for his/her learning, and that they be allowed to engage in any feasible activity regarded as relevant to studies.

### Providing 'Other Resources'

**'They [the Company] supported me by getting recommended study texts, which are difficult to obtain from the college library.'**

Certainly, students will have access to the wealth of resources which can be found on the company Intranet, but examples were also found where the company had made an extra commitment; in some cases purchasing expensive technical books 'to support [the student] in his studies, and with his project.' Small companies in particular saw such support as an investment for the future. This is vividly expressed below:

**'Based on [named student's] recommendations, the company have bought lots of specialist materials for him to investigate as part of his Project, over and above what the normal production people here would use... The company are learning to trust him, investing extra money in purchasing such specialist resources. These resources are actually non-productive. They are specific only to his needs.'**

Here, the company was purchasing resources whose only use was for the student's own development.



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The investment in the student has not stopped there; in the example below, there has also been a pay-off for the company:

**'We are investing a lot in equipment for [named student]. He has come forward with ideas and proposals for new equipment and new processes, for ways of improving the way we do things. For instance, he asked for a new piece of software, a digital camera on the microscope, for analysing certain things. He wants automatic testing machines. I haven't had to push him. It's brilliant, because we can then start a discussion, and investigate a bit further. A lot of the proposals are not big investments, but do save us a lot of time in our processes. The thing is that he has come to me with these ideas.'**

Initial investment for the student has built up trust and has also increased his confidence to seek further funding, in this case, to enhance company operations. The student is becoming proactive, the company is evolving a capacity to appraise and respond to requests, and the investments are paying off.

With the above, we have drifted into a consideration of the benefits of student participation in the Foundation Degree course. This must be the content of a later section in this report. For now attention remains on 'Learning in the Company', but with a focus on the people involved.



# 13 Learning

## Learning in the Company (2): The People

'My motivation is maintained because there is commitment and active support from the company through my colleagues.'

Students engaged on the Foundation Degree at Bradford College stressed that by far the greatest resource available to promote their development was the 'wealth of experience and expertise' held by other colleagues.

In a number of cases, they felt they were working in a 'nurturing environment', in a culture where senior colleagues 'took pleasure in sharing experiences, and in seeing others develop and grow.'

Arrangements for supporting student learning varied quite markedly from one company to another but, in one aspect, all were similar. In line with expected practice, each student had been allocated a work-based mentor. This was a senior colleague often, but not always, the line manager, who was the first point of contact with the College. This mentor had the responsibility for supporting student 'learning in the workplace', especially with regard to the Work-Based Project.

### The Work-Based Mentor

'[Named mentor] is the first point of contact if I have a problem, and he may respond to me directly or find others who can help.'

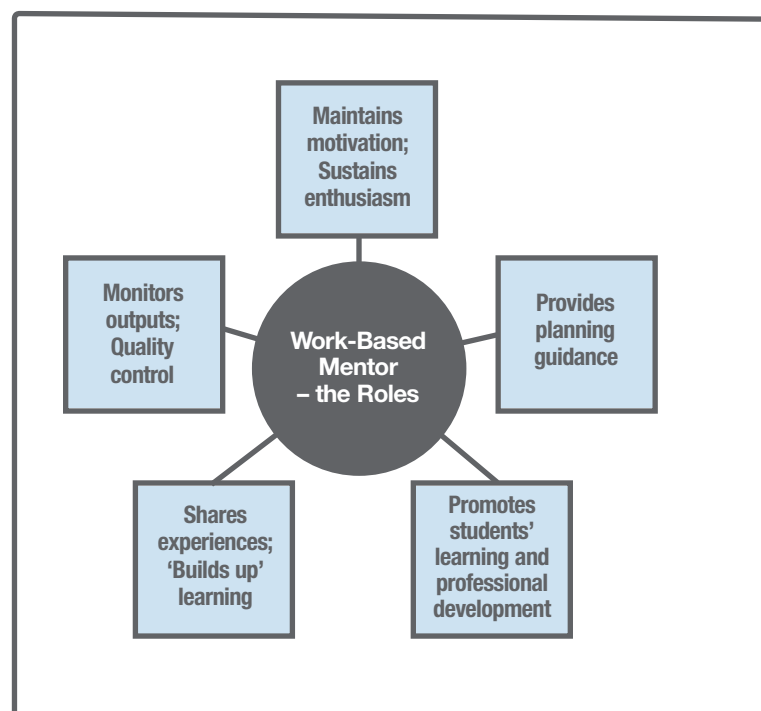
'[Mentoring involves] being pro-active; providing little acts of support... oiling the wheels.'

'[He] keeps pushing me forward, keeps on encouraging me.'

'[In relation to Work-Based Project], my mentor is someone I can bounce ideas off.'



The evaluation reveals that the mentor adopts a number of roles (see diagram below):



- Generally contact is made with the mentor on a daily basis, as part of normal work routine. They act as the first point of contact should 'a problem arise', and 'something unforeseen occurs', and either respond directly or facilitate support from elsewhere, operating 'through little acts of support.'
- In many cases, they help sustain enthusiasm 'keeping pushing the students forward', continuing to provide encouragement.
- In addition, they provide leadership in relation to forward planning by guiding students to:
  - Identify priorities
  - Sustain a sense of proportion
  - Set realistic rather than over-optimistic targets.
- They have an important role in promoting students' learning and professional development by:
  - Promoting access to resources (especially other colleagues) within the company
  - Sharing their own experience
  - Encouraging students to 'capture' experience and expertise by learning from their mistakes.
- A great deal of the mentors' role involves sharing experience and helping the student build on what has been learned through the course, or through engagement on the Work-Based Project.
- The mentor has a crucial role to play in 'bringing the textbook into the industrial environment', and helping translate theory into practical understanding. Crucial to this is that they get students to learn through problem-solving.
- Finally, mentors assume some responsibility for quality control, in monitoring the student's outputs.

The mentors have never received specific training by the College in relation to their role, and from the evidence generated in this research, such training has not been necessary. Mentors featured in this sample are able to draw on their considerable experience and expertise to meet the demands of the role, in all its facets.

Certainly, demands fall more heavily, especially in relation to support and guidance, when the student is engaged in the course through distance learning. It may well be that, as the commitment to this mode becomes ever greater, thought may need to be given to holding some form of preparatory sessions for those entrusted with the mentor role.

What is also clear is that the mentor is very rarely alone in supporting the learning, as is considered below.

## Other Collegial Support

In addition to their mentor, students also have access to a range of technical expertise when engaged in their studies. It was explained earlier that many of the students felt they were working in a 'nurturing' environment, one in which colleagues took pleasure in sharing experiences and expertise. Students felt they had access to this 'as and when the need should crop up'.

In a small number of companies, investment had been made to make available to the workforce colleagues, brought back from or close to retirement, who could act as sources of advice and guidance. The student was free to access such expertise.

Finally, in one company, an example emerged where specific investment was being made on behalf of the student:

**'I am investing money, buying in [retired colleague] to come in one day a week, following his day-release, to talk over the course, and to relate the theoretical stuff to the reality of company processes.'**

Having considered support in the workplace, attention now falls on a vital element of the students' learning experience: the Work-Based Project.

# 14: The Work-Based Projects

'The Work-Based Project is another positive for Bradford College. It focuses on real-life examples related to the student's university studies. The job the students are doing today can be their Work-Based Project tomorrow.'

'I think the project is a great idea. It gets the student into the real world rather than being surrounded by the academic. It translates what is being learned into the working environment.'

'The projects represent an investment in company problems that need resolving. The College have allowed the Work-Based Project to focus in this way. It [the topic] is real. It is not something we have fabricated. It addresses a company issue.'

Work-Based Projects are an essential feature of the learning experience of students engaged on the Foundation Degree. They have evolved in part from a Teaching Development Grant provided by UKCME, which enabled staff at Bradford College 'to explore the workplace as a learning environment'. They are a further illustration of the excellent practice adopted by the Metallurgy and Materials Section in relation to engaging with employers.

Clearly, they are highly valued by all stakeholders. They evolve through collaboration. They are designed to meet learner needs, but focus also on issues and problems which are relevant to the workplace.

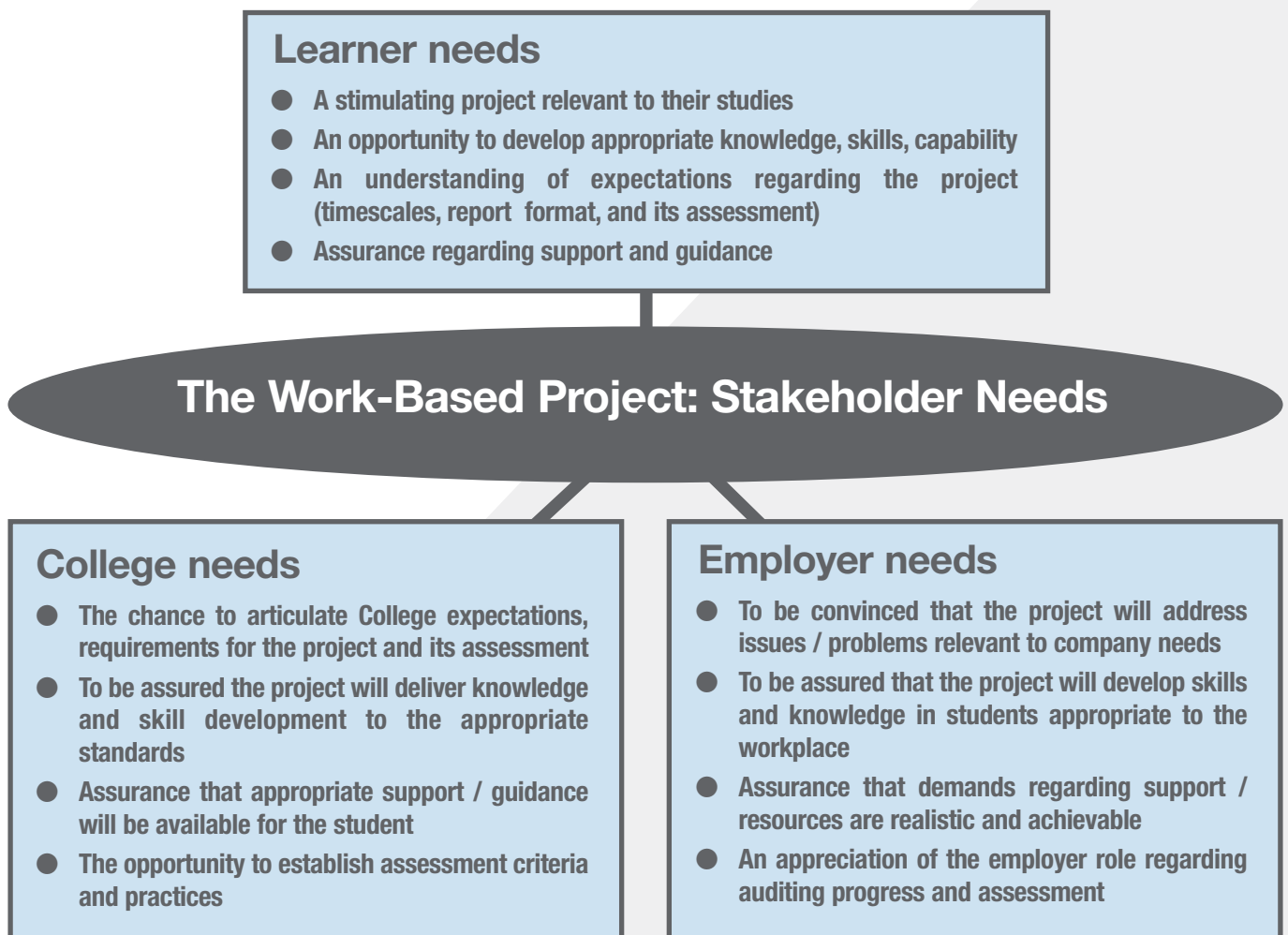




The processes involved in establishing a suitable Work-Based Project are presented below:

- An active exploration takes place during the company visit involving College staff, the student and his / her workplace mentor.
- The aim here is to define and shape a project of study to be undertaken within the workplace. This must provide, for the student, a learning experience of the appropriate quality; enabling him / her to develop both knowledge and capability to an expected standard. The project, however, must also be of value to the company, i.e. it must explore or address 'real problems' for which a solution is being actively sought.
- College expectations will also be articulated, e.g. in terms of the format and length of the final report, and its submission date; and in relation to assessment practices and requirements.
- Again, an appraisal will be undertaken by College staff of the quality and extent of support to be made available to the student while engaged on the Work-Based Project. Will there be time and resources available? What will be the students' access to their mentor, and to other expertise within the company?

Each of the stakeholders brings to the discussion a number of needs which have to be addressed and satisfied. This is represented in the diagram below:



## Meeting Stakeholder Needs

**‘As always with Bradford College staff, the aim is to be as flexible as possible. Although there have to be regulations, these in no way were allowed to get in the way of aiming at something which would be really valuable to [named student] and useful to us [the company] as well.’**

Clearly, real employer engagement can only be achieved if all the stakeholders meet to explore and plan the Work-Based Project. College requirements must frame aspects of this discussion, but cannot be allowed to restrict the planning process. The emphasis is on being flexible.

### Meeting Learner Needs

This research revealed that during these discussions the students’ own development needs were paramount. The scope and content of the Project had to be commensurate with the individual’s level of capability. The demands made by the Project had to be linked to the knowledge and experience the student currently had. A great deal of time and thought was spent in both identifying learner needs, and then on targeting the Project experience on to specific areas.

In the early stages of student development, Projects often focused primarily on filling knowledge gaps, on developing specific skills, and on enhancing understanding of company ‘processes’. However, although the learner must be at the ‘centre of the process’, as has been emphasised earlier, company needs had also to be met.

### Meeting Employer Needs

**‘The Project must be determined by your day-to-day work, rather than imposed by the College. The company has got to say that it has this particular problem, and would like to use the opportunity that College requirements present for the course to provide a solution.’**

The Project must build on College studies, but must also translate learning beyond the academic world into the industrial context. The focus cannot only be on developing the learner, but must also engage with problems to which companies will actively seek solutions. This is clearly expressed in the comment above. If employers are to engage in the learning process, the Project cannot be imposed by the institution. Research for this report showed that this is something staff at Bradford College fully appreciate.

The research also revealed that as a result of the collaboration with Bradford College, a number of Projects emerged which proved of real value to the company; in some cases, as is expressed below, undertaking work which would not normally have been done:

**‘It is a very busy factory. We have very little time to roll-out research work...’**

**‘This study is something we would not normally have time to do, because of commitments from constant test analysis...’**

**‘Without the course at Bradford College, the student would not have undertaken the project on sub-sea welding...’**

Although the Project must be located in the normal industrial context, it will take the student beyond his/her day-to-day tasks.

Factories are very busy, often unpredictable places. Although problems can be identified, there would not normally be time to undertake the necessary detailed investigations and research to address them. The requirement on the student to complete the project creates that time.

## The Work-Based Projects: some examples

The range and variety of work undertaken by students is represented below:

**'We had problems with a chemical descaler. The Project looked at why this was happening, and at what we could do to stop it.'**

**'It was a heat treatment processes required by a customer. The processes were on a specific steel wire...'**

**'The first part was on the theory of quenching, the variables that can affect it, and why it is done. This was then tied into our workplace, analysing the results we have had in the past, in terms of distortions, etc.'**

**'[The Project involved] seeing if there was anything that we could do metallurgically, by conditioning the metal or through different ways of casting, to make the material tougher, and more resistant... I did a lot of investigations into different ways of treating the core material, as it was being poured, cast; different ways of melting, the charge make-ups, heat treatment rates, etc... I was investigating whether there was anything we could do to alleviate the problem...'**

**'I did a lot of research on sourcing appropriate equipment, and on how to do the process. The Project involved visiting a number of suppliers.'**

**'This Project focused on a new technique; a new area of business that the company could develop. It makes sense to set up the process commercially under our own roof to give us a competitive edge, but this means setting up to run in the plant and being able to meet industry standards. People are a big part of this. The Project has involved building up knowledge, and making it simple enough to understand and carry out, from operator level to the lab side.'**



Projects looked at why things were going wrong and sought solutions. Sometimes, they were undertaken in conjunction with particular customers.

Addressing the problem involved a combination of exploring relevant theory, and then tying this into the workplace context through active testing and an analysis of results.

In some cases, the Project takes the learner beyond active investigation. In the final case above, the student has been pushed to consider how messages from the Project can be communicated effectively, and to a diverse audience.

Clearly, a great deal of thought, planning and time has been invested by all parties in these Work-Based Projects. There can be no doubt that the students have found the experience of doing these Projects stimulating. All parties regard the process as highly worthwhile. Evidence to support this is presented below.

## Benefits for the Company

The importance was stated at the beginning of this section of making the Work-Based Projects relevant to the needs of the company. There can be no doubt that the College and its industrial partners have been highly successful in this. Nor can there be any doubting the real and positive, and in some cases far-reaching, pay-offs that have accrued.

Some examples of this, based on the research documented in this report, are presented:

### Demonstrating a Better Way

'There was a project for a Dutch customer. Based on the findings, [named student] was able to make presentations to the company to demonstrate a better way of doing heat treatment.'



### Influencing Purchasing Requirements

'This project alerted us to a problem, and as an outcome, rather than rewrite our materials specifications, we changed our purchasing requirement for the suppliers. In effect, we specified a smaller tolerance in the sulphur levels. This was put into practice across the company, and is still used now. So, that project had a major effect. It was a real company problem that I picked up, looked up in detail, and came up with a solution.'



### Modifying Working Practices

'[The student] has been able to make people here get the furnaces under control, and to introduce various modifications and tracking systems; which would not have happened without having [named student] involved.'



### Saving Money

'[The Project] has been of value. I have come up with several preventative measures. In 2005, we had 20 or 25 thermal breakages. In 2006, we have had three. That's a significant reduction. With an average cost of these being between £20,000 to £35,000, that project has proved economically worthwhile for our company.'



It is clear also that students have benefited very considerably from engaging on the Work-Based Project. This is considered in the next section, where the focus falls on the benefits gained overall from engaging on the Foundation Degree.



# 15

## The Benefits

# Benefit

In the early part of this report, we learned that the student population currently connected with Bradford College was a diverse one. All, however, did have one thing in common. They had committed time and energy to engage on a Foundation Degree, and had done so with the active support of their employers.

This research provided all participants with an opportunity to reflect on what had been achieved, and to identify the benefits that had accrued. We learned in the previous section that engagement by employers had brought benefits. But what of the students?

### Widening Participation and Promoting Progression

**'I am pretty sure that, if I can get this course under my belt, it will be highly valued by the company. It is the person who takes the time and effort to get the qualification, and who is bettering their education, to support the business world, that is highly valued by this employer. It matters to this employer, not to just have the experience, but also to have the qualifications to say so.'**

**'Unfinished business. In this global manufacturing industry there is a big difference between holding an HNC, and having a BEng degree. I went to university, but never graduated. I went into full-time employment, pursued my education in a more financially secure way. I have always wanted to get a degree. It's for my career progression.'**

**'My future depends on having the BEng. For my future to be successful, a degree is necessary. This company used to be family-owned, but it has now been taken over. All the senior positions are held by people with degrees. To move on any further, it is necessary to have a degree.'**

The three students above are under no illusions that, within the current industrial climate, they have made the correct decision by engaging on the Foundation Degree. A newly instituted BEng at Bradford College will be validated in mid-2008, and will enable them to move forward.

Success from studying at Bradford College will tell the employers a great deal about the individual. It will be proof that the student has taken time and effort 'to better him/herself'. The College has given them an opportunity not just to enhance their experience and expertise to a high standard, but will deliver the qualification to prove it. Successful completion of the course means that individuals can progress their own career. It is a springboard from which they can move on.



The following three students also see considerable benefit from gaining the qualification, although they appear to be in somewhat different circumstances.

**'I am starting to think about the future; eventually, whether to stay, or to move onto higher things. I would like to work in a multi-national company, especially on the continuous improvement side of Materials... That could probably mean moving abroad. The qualification will help.'**

The student above is thinking about his/her future, and weighing up the options. There is clearly some ambition here, and a conviction that the BEng gained from Bradford College will facilitate career progression.

By contrast, the two students below seem much more content to remain with their current company.

**'I am motivated, but not a high-flyer. Hopefully, I will take a position having got the BEng, with the associated salary package and responsibilities. It will be good to finish with the BEng degree at the end of next year. By then, I will be 50.'**

**'I will stay here [at named company], building up more experience in other Departments of the company. I think I have made the right career choice in coming here. The degree is part of building up my expertise.'**

Although the choice will be to remain with the current employer, this does not diminish the importance of getting the degree. For the first student, it means at a relatively late stage in his/her career, assuming a position of genuine responsibility, with a salary and conditions commensurate with that. The second student sees the degree as part of a staged process in which s/he gradually builds up experience and expertise within the company.

The second comment above leads us naturally to the final element of this section: the impact on the quality of the workforce.



## Enhancing the Workforce

One of the major reasons for introducing Foundation Degrees, and for establishing agencies such as the Sector Skills Council, has been a determination on the part of Government to enhance the skill-base in UK industry.

Industrialists involved in the research for this report made it clear that to succeed in the current challenging climate, companies would need to invest for the future; looking to their current workforce, spotting potential, and seeking through training and education to build on that potential.

In several cases, the companies themselves were investing heavily in their own programmes of development. All had engaged actively with Bradford College to support the Foundation Degree in Metallurgy and Materials.

We saw in the previous section of this report that, primarily through the Work-Based Project, there had been clear benefits for the companies, and in some cases for valued customers. There had been marked improvements in industrial practice, some of which had translated into significant cost savings.

The research in relation to the Work-Based Project also identified a number of ways by which students had benefited.

### Students Develop a Mindset to Question and Think

**'One benefit is the Projects have given [named student] a mind-set, a process and mechanism to enable him to question and think about what else the company can do in terms of improving its operations, and pushing things forward. So, other continuous improvement-type projects emerge.'**

A major message from the above comment is that the Project is not operating in isolation, a one-off exercise to be completed and forgotten. Engaging for this student has influenced his/her way of looking at things; has fostered a critical approach in which current practice is subject to critical (and ongoing) questioning. In effect, the Project has become part of a continuous process, with other projects emerging.



### Students Develop Professional Attributes

**'I can see with [named student] that working on the Project builds in a sense of discipline, and dedication. It makes the student focus and see things through.'**

The Project has helped nurture professional attributes; self-discipline, dedication and determination to complete what has been started.

### Students Build Up Knowledge and Gain Job Satisfaction

**'I have definitely grown in knowledge, and in job satisfaction. I now know that the product going out to our customers is right, and I am getting a chance to look at that through my role.'**

The brief quote above is typical of many collected during the interviews. As a result of engaging in the Project, students now know more. In addition, because of the connection with real work and because students had taken the leading role in the Project, there had also developed a deep sense of satisfaction. Practices at work had been improved, and the student had played an important role in this.

### Students Become Confident and Proud

The comment below goes beyond this, to speak of the pride the student had gained from undertaking the work successfully.

**'[The Project] has tied into what I need for my training. It develops my abilities to deal with the wider picture; to see how things operate within this company. It has been good for my development. It makes me feel quite proud... When I started here, I worked on small day-to-day projects. But, when you get involved in these large Projects, it really builds your confidence. You get more responsibilities. I think the College Project provided an opportunity for an Apprentice like me to do the kind of project that would normally be considered for somebody else, for somebody who was fully qualified as an engineer.'**

There is a lot here. The Work-Based Project means that the student now has a fuller appreciation of how things operate. S/he can see the bigger picture. But, there is much more. The Project provided an opportunity which would otherwise not have been available, to take on real responsibility. As a result, the student has grown in confidence, and is clearly better equipped to take on a responsible role within the company.

## Benefits: the final comments

‘Without College involvement [the named student] would have basically been a Metallurgist, never undertaking specific project work. The College has certainly pushed him in the direction of more extended and challenging project work. This has clearly benefited him, and the company.’

‘[Named student] was a young lad before joining the College course. He certainly did not have an old head on his shoulders. Now, he is more mature, and certainly developing communication skills, and technical capabilities. He is learning how to deal with people.’

‘I know how to do my job, but it is always better to know more. You can always expand, extend yourself, enter more areas for development. Personally and professionally, the College course has given me more confidence to work with the people we provide a service to.’

The final comments above, from both students and their mentors, bear testimony to the very positive impact undertaking the Foundation Degree has had. The course has pushed and challenged the students. Participants have grown in confidence and maturity, and have become better equipped both technically and socially.

As the final comment explains, the course has promoted both personal and professional development; an enhanced capacity to work independently, to engage with others and to produce a ‘high quality output’.

It is clear that employer investment is paying off. As a result of engaging with Bradford College, employers are gaining a more competent and capable workforce, better equipped to deal with current pressures and future uncertainties.





# A16: Brief Conclusion

It is clear from this research that Foundation Degrees do represent a powerful mechanism for enhancing the quality of the industrial workforce, and for widening participation in the education and training process.

To make them work, they need active and sustained employer engagement, and the Metallurgy and Materials Section at Bradford College has shown how this can be delivered.

To achieve success, a number of components must be in place. College staff must find time to visit, listen to and learn from employers, and reach an understanding of the needs of learners and of industry. They will need to develop practices to accredit and capture prior experiences and learning, and must be able to build on this. There must be in place an appropriate level of experience and expertise to develop a course content which is relevant to the industrial context; and a variety of modes will be required to deliver this. Practices must evolve which will respond to learner and employer needs, and these should be flexible enough to adjust when these needs change. Finally, excellent practice must be established, in collaboration with employers and students, which will promote active learning in the workplace; which will link effectively with theoretical content, but which will also prove relevant to industry.

Bradford College is not resting on its laurels. In active collaboration with UKCME, there are plans for further developments. New partnerships are being forged with employers, which will extend the range of Foundation Degrees on offer. Further work is being undertaken to enhance the quality of the distance learning mode, and to establish blended learning for the Foundation Degree and BEng.

Finally, such is the quality of the practices developed, and of the depth of expertise gained by the Section at Bradford College, that further support should be made available to enable colleagues within the Section to share best practice, both within their own institution, and beyond. A very positive start has been made on this, through strong support of senior management at the College, and through the award of JISC funding. To make this happen, it is now necessary to strengthen College links with a range of relevant agencies (e.g. Fdf, SSCs, LLNs and Professional Bodies).

The aim must be to use the findings of this UKCME research to promote the benefits associated with Foundation Degrees, and to raise awareness of how College-employer partnerships can operate to provide those currently in employment with a valuable and rewarding learning experience.



# Institutional Endorsement

Many Higher Education Institutions are rooted in Britain's industrial heritage, and Bradford College is one such institution. Established and entirely funded by forward thinking industrialists throughout the 19th Century for the 'general instruction in those arts and sciences the principles of which are applicable to the various employments of life'.

Engagement with employers in the design and delivery of education and training is therefore at the core of the Bradford College mission, and this publication from the UKCME clearly captures one of our successful models of employer-college working. This is a significant piece of work, founded on very detailed and thorough research, with which I am honoured to be associated.

This publication describes and analyses the commitment of students, their employers and academic staff to improving business performance through investment in dialogue, relationship-building, development of programmes and materials, and using a range of technology to deliver and support learning. There are powerful messages contained within the quotations from those interviewed; most are very gratifying, others tell us there is more we could be doing. We are extremely grateful to the UKCME authors for providing clear recommendations for further enhancement of the curriculum and the infrastructure supporting it.

The success of this model lies in relationships, not only the employer-college-student, but also the support, financial and otherwise, that Bradford College has received from JISC and HEFCE to name but two. The sustained role of the UKCME over the years has been significant, mostly recently through its Supported Change Programme, and this is much appreciated.

This case study has given us a further injection of enthusiasm, and a clear recognition from outside the College that the work of the Metallurgy and Materials Section is of national significance. I take this opportunity to commend and thank the staff of that Section. This UKCME publication will support further refinement and new developments in Metallurgy and Materials within the College. It will also further promote, through the doors it will open, the significant role of HE in FE, both across the College and the sector.



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Employer Partnerships:

# Employer-College Partnerships: Developing a Materials Foundation Degree

## Developing a Materials Foundation Degree a Case Study from the UK Centre for Materials Education

Case Study from the UK Centre for Materials Education



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