
An Introduction to Work-Based Learning

A Physical Sciences Practice Guide



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The views expressed in this practice guide are those of the authors and do not necessarily reflect those of the UK Physical Sciences Centre.

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Abstract

The term work-based learning is widely used throughout the literature, academia and industry to describe a multiplicity of approaches by which one can learn through work. The complex nature of work-based learning can often lead to confusion when designing courses which aim to implement such an approach.

This practice guide will focus on:

1. The rationale for conducting work-based learning.
2. The varieties of approaches to work-based learning that are currently implemented.
3. Student opinions of work-based learning.
4. How to resolve any implementation and communication issues.

There are many approaches to developing work-based learning modules, courses and projects that utilise learning at, learning for, and learning through work.

Aims of this guide

This practice guide is to give an overview of some of the current literature exploring work-based learning, as well as outlining case studies of work-based learning modules currently implemented at several Higher Education Institutions (HEIs) throughout the United Kingdom. This should provide the reader with a general idea of how work-based learning is approached and how module outlines can be created and adapted to appeal to HEIs, employers and learners.

This guide contains three key sections:

1. Literature review.
2. Work-based learning modules.
3. Assessment guide.

This guide should be useful during the development of work-based learning modules as part of a Higher Education qualification.

Once you've explored this booklet you should:

1. Understand that work-based learning is a flexible tool.
2. Understand the variety of work-based learning approaches.
3. Be able to design a module that appeals to the tripartite of HEI, employer and learner.
4. Appreciate any issues that may arise for HEI, employer or learner with respect to work-based learning.
5. Be able to utilise a number of the assessment tools explored to provide the best feedback and evaluation for learners.

Identifying the need

Many reports identify the need to up-skill the workforce,^{1,2} with the Leitch Review of Skills setting short and long term goals for education in the UK. The Cogent Skills Review analyses in great depth the many aspects affecting the major science, technology, engineering and mathematics (STEM) industries. It outlines future priorities for each industry whilst considering the role of Sector Skills Councils (SSCs) in increasing the skills of the workforce within the chemicals, pharmaceuticals, oil and gas, nuclear, polymer and petroleum industries.¹

The Leitch Review of Skills sets an ambitious target; that by 2020 the UK will be within the top eight worldwide for each skill level, with emphasis on delivering qualifications to a far higher percentage of the workforce. The targets aim for over 90% of adults qualified to above Level 2 whilst also shifting the balance of skills from Level 2 to Level 3 as well as increasing those with Level 4 qualifications and skills from 29% to 40%, combined with increasing the number of adult apprenticeships.²

The skill levels are defined by the National Qualifications Framework (NQF) as shown in figure 1:³

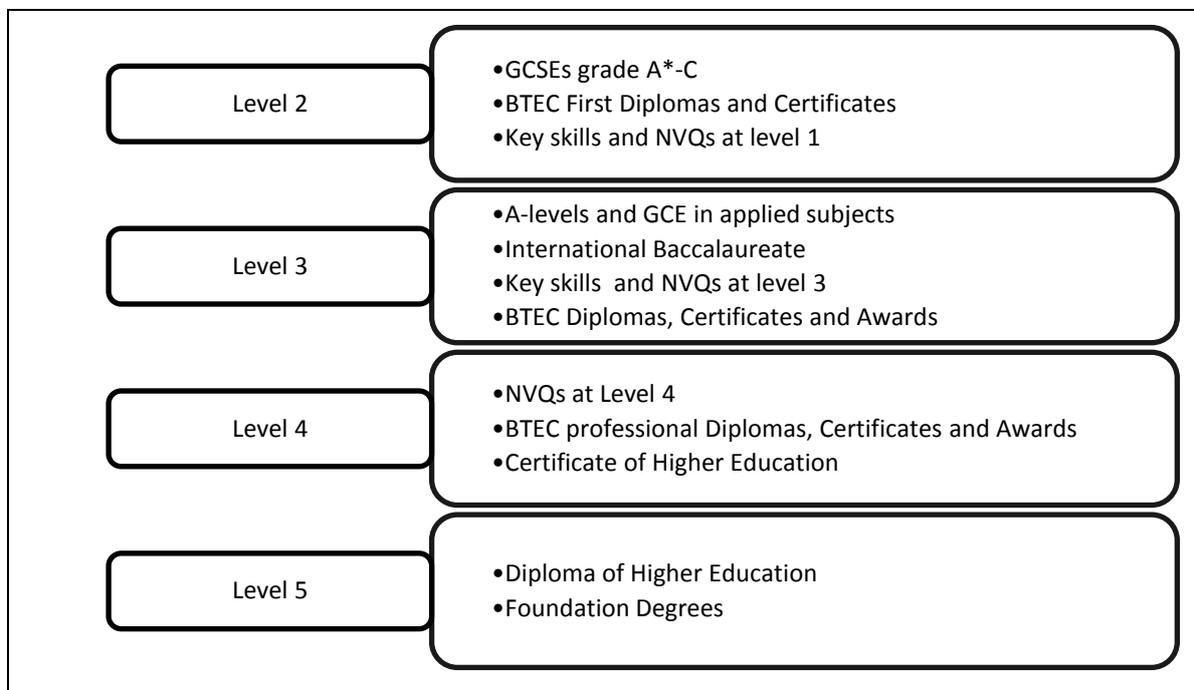


Figure 1: Skills levels, as defined by the National Qualifications Framework.³

The level of upskilling described in the Leitch Review means that a greater partnership involving educational institutions and employers is required. Levels 4 and above are of interest for HEIs where collaboration with industry is traditionally not common.

The main recommendations for the improvement of skills in the UK are identified in the Leitch Review; the following recommendations are reproduced directly from the Review of Skills:²

'Increase adult skills across all levels.'

'Route all public funding for adult vocational skills in England, apart from community learning, through Train to Gain and Learner Accounts by 2010.'

'Strengthen employer voice.'

'Increase employer engagement and investment in skills.'

'Launch a new "Pledge" for employers to voluntarily commit to train all eligible employers up to Level 2 in the workplace.'

'Increase employer investment in Level 3 and 4 qualifications in the workplace.'

'Increase people's aspirations and awareness of the value of skills to them and their families.'

'Create a new integrated employment and skills service.'

The Leitch Review anticipates that Sector Skills Councils will take an integral role in the approval of vocational qualifications; this allows for cooperation between employers with SSCs to produce qualifications that benefit industries; these courses may be delivered at established institutions as well as work-based learning qualifications and in turn will attract public funding.²

The 2009 report entitled Skills for Growth highlights and reiterates the importance of increasing the standard and number of technicians within industry,⁴ increasing the number of formalised qualifications obtainable particularly through apprenticeships.

Defining work-based learning

It is widely being acknowledged that work-based learning (WBL) strategies are a vital part in the ongoing and future development of the existing workforce. For example, in Europe the *Developing European Work Based Learning Approaches and Methods* (DEWBLAM) project⁵ intended to develop a Europe-wide network of models and approaches to WBL within a European consortium of establishments, with the aim of allowing access to Higher Education qualifications for those adults currently in employment, through accreditation of prior and experiential learning.

A broad definition of WBL is offered in *Work-based learning: A New Higher Education*⁶ where the authors expand upon their definition to include meeting the requirements of learners and the contribution that this learning will have in the development of the organisation in the long term:⁶

‘Work-based learning is the term being used to describe a class of university programmes that bring together universities and work organizations to create new learning opportunities in workplaces.’⁶

Gray identified three key elements to work-based learning which all learners and employees can relate to:

‘A definition for the higher education level could involve any of the following work-based learning types; learning through work, learning for work and learning at work.’⁷

A further definition of work-based learning which encompasses foundation degrees is provided by Sodiechowska and Maisch:

‘.. where students are full-time employees whose programme of study is embedded in the workplace and is designed to meet the learning needs of the employees and the aims of the organisation.’⁸

With respect to pedagogy, the practice of work-based learning can be considered to be the continued lifelong learning adults undergo throughout their lives, following education;⁹ in an educational environment. Work-based learning is a widely utilised tool employed by both HEIs and businesses to educate and develop their students or work-force in all three elements outlined above.⁷

There are many WBL pathways involved throughout the education system as well as in higher education institutions and businesses, and there are many means by which the student is engaged and assessed. Using the definition provided above by Gray, the following collection of approaches was compiled to illustrate the three types of learning.

Learning for work

Learning for work can involve the secondary-school student embarking on a two-week work-experience placement, whereby they would be involved, albeit very superficially, in the processes of the workplace, reporting on how they developed over their time there as well as log-keeping.

A further example is the long-established sandwich-course observed in HE; with students spending a year in industry carrying out a more significant role within their company, for example in science-based industries an involvement in new product or existing product development, observing their theoretical knowledge in a working environment while being assessed as part of their degree course.

Teacher training courses such as Post-Graduate Certificate of Education (PGCE) or Graduate Teacher Programme (GTP) routes which involve professional development of a learner with training specifically for a certain job are also learning for work. Teacher training courses are available as purely work-based programmes, as is the case for the GTP or School-Centred Initial Teacher Training (SCITT) courses. The PGCE route offers work placements to assist in the learning for work, as well as combining principles of pedagogy and classroom management through educational institutions, with subject specific work. All routes require each learner to collate a portfolio of evidence throughout their time within the workplace.

Learning at work

A commonplace example of learning at work is the well-established on-site company training schemes and programmes which can provide a means of upskilling the existing workforce without the need for lengthy periods of time away from their work, for example taught through an experienced senior technical expert employee or an external consultant from a specialist company. In general, these courses are not often formally assessed or given accreditation.

An example of an off-site training scheme run by the British Aerosol Manufacturers' Association (BAMA) is the Introduction to Aerosol Technology,¹⁰ designed to train and educate industries and employees on aerosol technologies. This course provides a good example of prior learning through which accreditation could be awarded.

Learning through work

There are examples whereby completion of on-site training courses are formally assessed and accredited; these are examples of learning through work as well as accredited day-release programmes through further and higher education institutions.

Work-based learning approaches

There are many recognised courses throughout the UK which involve aspects of WBL and there are several universities with established WBL departments, with courses which can specifically cater for the individual as well as for their industry.

A recent paper by Lineham and Sheridan¹¹ delves quite extensively into workplace learning courses offered within Irish third-level colleges (UK – HE equivalence), to deliver new provisions for workplace learning programmes. Lineham and Sheridan surveyed seven HEIs for a total of 433 courses, of which 221 were designed by the institution alone, 47 as part of a collaboration between the institution and industry and only 10 designed by industry.

It was found that learners using a work-based approach learn from their community of practice in their workplace as well as their work-based learning peers at the university.¹²

A study by Rhodes and Shiel aimed to discover how work-based projects promote learning for the worker and their organisation;¹³ the research outlines through case studies how work-based projects have been utilised successfully by Northumbria University. The same review involves an in-depth look at the WBL courses that are running at Northumbria University where they highlighted principles which are based on those described by Boud:⁶

1. A partnership between organisation and university to foster learning.
2. Learners are employed/in a contractual relationship with the external organisation.
3. The programme followed derives the needs of the workplace and the learning: work is the curriculum.
4. Learners engage in a process of recognition of current competencies prior to negotiation of programme of study.
5. A significant element of the programme is through learning projects undertaken in the workplace.

6. The University assesses the learning outcomes against a trans-disciplinary framework of standards and levels.

These points can be further reinforced by Bragg and Hamm, who identified a set of criteria for the success of WBL courses; list reproduced from Bragg and Hamm:¹⁴

1. Strong programme leadership.
2. Exclusive connections between the programme and its environment (niche market).
3. Frequent and effective communications with local employers.
4. Beliefs about programme excellence.
5. Effective school-based learning component.
6. Adequate financial support.
7. Innovative programme and pedagogical features.

The Higher Education Academy (HEA) Centre for Education in the Built Environment has released a series of guides under the title 'Employer Engagement', sharing guidelines and case studies for the involvement of employers in the design of courses. Figure 2 shows the continuum of ways in which WBL can be delivered:¹⁵

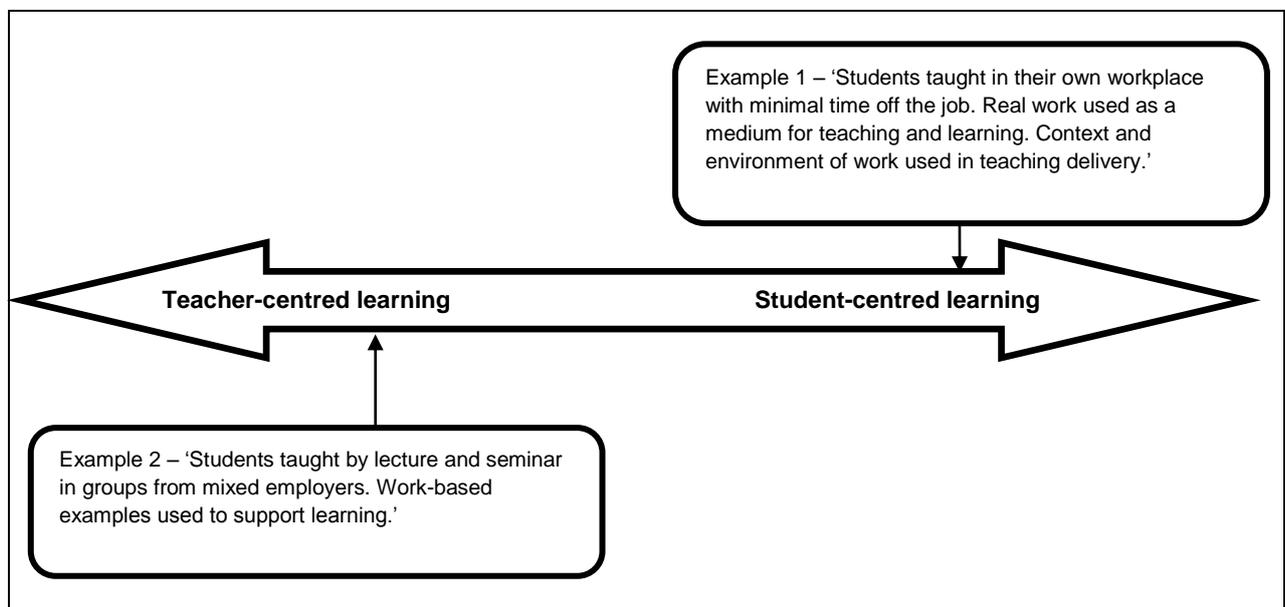


Figure 2 - The continuum outlining the two extremities of work-based learning. Figure and annotations reproduced from Williams and Thurairajah.^{15, 16}

Examples 1 and 2 show two variations in the work-based theme, with the emphasis changing from teacher-centred learning (example 2) to student centred-learning (example 1); both examples allow for the delivery of courses by blended learning. In the guidelines set out by CEBE, example 1 is of a tutor travelling to various employer establishments delivering content by a face-to-face means, but this could readily be adapted for distance learning.

Most literature on the subject advocates an individualised approach for the learner whilst maintaining contact between academy and employer to assist in development of the learning plan and also satisfying the requirements of the employer; the employer involved should have a lot more input into the design and outcomes of their learners' course structures.¹²

The Learn Direct agency allows for further education and training for the existing workforce, with courses designed around the learner's requirements to fit in around their work-life with their

'Learning through Work' programmes designed specifically for such needs, several courses run in partnership with the University of Derby.

With relation to work-based learning to organisations and employers a quote from Clarke and Copeland states that:

***'Work based learning is commonly taken to refer to structured learning opportunities which derive from, or which are focused on, the work role of individuals within organisations.'*¹⁷**

The definition above provides a foundation for the new learning being based on requirements of the workplace, through collaboration between universities and work organisations, whilst incorporating underpinning knowledge and focusing these into a real world, work-related problem.¹⁷ This allows for the development of a combination of the relevant foundation of science knowledge complemented by the learning opportunities available through the workplace.

Different models of work-based learning

Several different courses and HEIs will be reviewed, determining whether there are any common aspects which can be built upon.

Brennan and Little define one way of constructing work-based learning courses:

*'Curriculum controlled by higher education institution, content designed with employer – learner primarily full-time employee.'*¹⁸

The courses are designed with input from employers, with the framework arising from the pre-established subject discipline structure, with credits gained from modules within the course and also from accreditation of prior learning; which involves the assessment of learning gathered from work itself.

Foundation Degree Forward (fdf) has published a series of detailed guides (available online: www.fdf.ac.uk/) relating to all aspects of structuring a work-based learning course as well as engaging with employers. Two specific guides (Work-based Access to Higher education [Course Development Checklist] and Work-based Access to Higher Education [Guidelines]); available online respectively:

<www.fdf.ac.uk/downloads/110/20090812141338fdfwork-based_access1.pdf>

<www.fdf.ac.uk/downloads/111/20090812141535fdf_work-based_access2.pdf>

These relate to the development of foundation degree courses that include work-based learning; the second guide states two major factors for effective development of work-based learning and work-related skills.¹⁹ The lists below are reproduced from Work-based Access to Higher Education [Guidelines].¹⁹

Work-based learning skills:

1. Develop solutions to workplace problems drawing on theory and practice.
2. Exploit the workplace as a learning resource.
3. Manage oneself (and others).
4. Reflect on what has been learnt in and from the workplace.
5. Transfer existing knowledge, capabilities and competences to new or different contexts.

Work-related skills:

1. Action planning.
2. Contribute to meetings.
3. Entrepreneurship.
4. Goal setting.
5. Negotiating.
6. Networking.
7. Project management.
8. Self-appraisal.
9. Team working.
10. Using, and acting as, a consultant.

The two lists describe different sets of skills; the work-related skills describe transferable skills which are both desirable and advantageous for all employees, whereas work-based learning skills involve the learner drawing upon subject knowledge and theory, combined with their experience, to utilise the workplace in personal development. During course development, care should be taken to

include the introduction and/or development of all the aforementioned skills within work-based learning modules, whether they are theory or skills based.

Which industries and sectors utilise this form of learning as a part of their new and existing work-force development?

An example to be found within a STEM industry is that of Shell International Exploration and Production (Shell EP), whose system of producing course learning activities specifically as workplace tasks is analysed by Collis and Margaryan.^{20, 21} An objective for Shell EP was to enhance their e-learning course with an increasingly blended approach, focusing on creating an effective community of learners through collaborative and social learning. They incorporated and emphasised aspects of work-based learning activities and problems encountered by technical staff, with the facilitation from supervisors within the workplace as well as experienced contributors.²²

Prior to structuring and developing a WBL course or module, design criteria were listed for the blended learning programme by Shell EP²¹ expanding upon Merrill's First Principles of Instruction, with the five principles of instruction defined as:^{20, 23}

1. Learners are engaged in real-work problems.
2. Existing knowledge is activated as a foundation for new knowledge.
3. New knowledge is demonstrated to the learner.
4. New knowledge is applied by the learner.
5. New knowledge is integrated into the learner's world.

From the collaboration between Shell EP and the University of Twente a list of considerations were developed to assist employers in the application of blended learning from within the workplace environment.²⁰

1. Base the course framework upon the First Principles of Instruction as defined by Merrill.²³
2. Address actual work-related problems and issues within the course by developing work-based activities agreed upon by both employer and manager/supervisor.
3. Utilise technology for submission of documents and discussion for peer assessment and assistance.
4. Utilise in-house tools and experiences to assist in the work-based assignments and projects with involvement of experienced employers to help in knowledge sharing.

What are the noticeable benefits of this form of learning for the employer?

A paper by the Foundation Degree Forward examines in depth the need for developing higher skills in the work force and outlines significant positives in the successful implementation of foundation degrees.²⁴ It also defines a list of key potential perceived benefits to entice employers toward collaboration with universities in order to train their workforce:^{24, 25}

1. Better quality recruits.
2. Flexible entry requirements.
3. Flexible, tailored to your needs.
4. Improved workforce performance and productivity.
5. Increased employee motivation – higher staff retention.
6. Meets skills shortages – grow your own workforce.
7. Work-based learning – little time off the job, minimal disruption.
8. Projects directly related to your business.
9. You [the employer] are closely involved in the delivery.
10. Potential to accredit company training programmes.
11. Extremely good value compared to private sector training.

12. Direct links to further qualifications and continuing professional development.

This list is by no means definitive. However, it does provide an enticing spectrum of positive aspects for employers tempted to develop their workforce with work-based learning courses.

Work-based learning curricula in the UK

The question “how are the WBL aspects approached and delivered?” can be more thoroughly addressed by analysing several modules from courses presently available at several higher education institutions throughout the United Kingdom.

What courses are available in which work-based learning is an integral part of the programme?

University of Derby

The University of Derby is a significant institution for its delivery of courses which involve work-based learning, providing fully accredited APL and APEL (Accreditation of Prior [Experiential] Learning) qualifications for learners in conjunction with their employers, actively targeting accredited in-company training schemes as well as providing qualifications ranging from NVQ to Masters. It was reported by Haldane and Wallace that the University has a large selection of online-only courses and is reputable nationally for their flexibility and original methods by which they deliver work-based learning.²⁶

The University offers three different levels of accreditation for prior learning:²⁷

1. For levels below a Bachelor’s degree, APL can be claimed for up to 50% of the total credit value of the course itself.
2. At undergraduate level accreditation of prior learning can account for a maximum of 120 credits per year at levels 4 and 5 (years 1 and 2 in England and Wales, 2 and 3 in Scotland) and 45 credits at level 6 (year 3 in England and Wales, year 4 in Scotland).
3. For postgraduate study, 50% of the total credit can be obtained by APEL or accreditation of prior certified learning.

For more information, please visit the University of Derby, Corporate website:

<www.derby.ac.uk/corporate>

Northumbria University

As outlined by Rhodes and Shiel, Northumbria University bases their work-based projects embedded with WBL courses on a six stage approach:¹³

1. Exploration.
2. Proposal.
3. Enquiry.
4. Project planning.
5. Project implementation.
6. Project presentation and evaluation.

The following generic work-based learning module outline is replicated from the Northumbria University website:²⁸

<www.northumbria.ac.uk/sd/central/ar/III/IIa/mod/>

Introduction to work-based learning

Work-Based Learning Framework Modules

The Work-Based Learning Framework offers a range of modules designed for learners who wish to focus their studies on their work. A summary of these Modules is available here. The Framework is sufficiently flexible to also include subject-specific modules. Further information can be obtained from the Work-Related Learning Services Manager, Sue Graham.

Learning Contract

The student will negotiate their programme at the outset. A Learning Contract is especially useful for large or complex programmes, as it will identify the mix of modules and learning the student needs. Other modules will include learning proposals but these will be specific to that module; the Learning Contract covers the whole programme.

The Learning Contract will be based upon the student's professional needs and for workforce development. It will be formative in that it will be periodically reviewed and adjusted if necessary; students will need to reflect on their progress as they work through their programme.

Managing Own Learning

This module manages the learning process once the programme has started – it includes reflection, evaluating the learning as it takes place and study skills.

Independent Study

The student – or their organisation – will identify an issue within the workplace that merits investigation, and draw upon a wide range of specialised or conceptual information in order to formulate a response appropriate to that issue. The student will need to be able to differentiate between theory and practice. Deciding on the topic to investigate is a matter of negotiation, from which the student will draw up a mandatory study proposal to be formatively assessed.

NB This module can be taken up to level 5 and is appropriate preparation for academic research at higher levels. However, academic research required for the submission of a dissertation at a higher level needs to be formalised by studying either a University Schools-based research methods module, or a Work-related Learning Framework module "Independent Study and Work-based Investigation" at the appropriate level.

Independent Study and Work-based Investigation

The student will identify a work-related issue or challenge which requires investigation; it may not necessarily be directly related to their own job role or scope. This therefore will allow the student to direct energy towards an area of work which may be relevant to them or perhaps match their career aspirations. However, it is still essential that they receive support from their employing organisation for this module, and the topic for consideration must present them with sufficient intellectual challenge.

The student will develop and demonstrate they have applied research and study skills effectively, such as exploring complex concepts, theories and making informed judgements.

The student will negotiate their research topic and submit a mandatory project proposal, and also make a presentation based on this.

Work-based Project

The student will identify a subject or area of work to form a project, for which they will accept ownership. The project will focus on organisational issues and enable the student to develop and enhance their skills such as diagnosis, analysis, developing strategies to address problems etc. The project will be within the student's own role or scope and be of a level of complexity that is equal to, or more, than their level of responsibility. It is feasible for students to be together in a cohort and therefore working jointly on the same organisational issue – each student will however submit their individual work.

This module is available at all levels, 3 – 7, and as either 20 or 30 credits with the exception of level 3 which is available at 20 credits only.

The student will put forward a project proposal, and at a later stage make an oral presentation of their findings.

Work-based Dissertation

This module is available only at level 7 and is 60 credits. The student will need to demonstrate that they have sufficient research skills and capability before embarking on this module.

The context and content of this module is similar to the Work-based Project, but the investigation will be of greater depth and/or duration (as reflected in the number of credits) and the longer final report will meet all the criteria for an academic piece of study.

Students will submit a mandatory project proposal and a presentation.

Academic Recognition for Continuing Professional Development (CPD)

Learners are often in an environment where they receive training and development that is specific to their occupational sector as part of their work. This may be a requirement of their professional body, their employing organisation or by a desire to keep up-skilled for career purposes. These modules enable the learner to obtain academic credit for these experiences.

The student will devise a learning proposal which identifies their appropriate CPD activity with a justification for these activities, and an action plan / timeline. Students need to attend events of at least six full days / 48 hrs (for 20 credit module) or three full days / 24 hrs (for 10 credit module). Students will then reflect upon these experiences and contextualise them to their work circumstances. (Note: CPD activities for this module do not include other study that receives university recognition.)

Figure 3 – Northumbria University work-based learning module framework

A key aspect noted above is the negotiability of the learning outcomes between learner, employer and HEI with emphasis on a student-centred learning approach with the student driving the focus of the work.

One sentence in particular is utilised in enticing student and employer interests, showing that the module lends itself nicely to the development of the student which in turn allows for development of the workforce:

'...based upon the student's professional needs and for workforce development.'

However, a statement further in the module outline specifies that:

'...it [the project] may not necessarily be directly related to their own job role or scope.'

This may be a safeguard in case a student doesn't work in a suitable environment to carry out project work.

For further information, please visit Northumbria University's "Lifelong Learning" website:

[<www.northumbria.ac.uk/sd/central/ar/III/>](http://www.northumbria.ac.uk/sd/central/ar/III/)

Scottish Centre for Work-Based Learning, Glasgow Caledonian University

In a study by Siebert, Mills and Tuff the experience of students on work-based learning courses at Glasgow Caledonian University were focused upon qualitative data collected through interviews and questionnaires. It was noted that students thought highly of the individualised approach, with emphasis on the social interactions and interpersonal relationships developed within their "community of practice" consisting of other work-based learners studying at the University.¹²

Several student-significant issues were identified:¹²

1. An uneven pace of learning.
2. Different levels of achievement.
3. Imbalance of power within the group.
4. Feeling of inadequacy in comparison with others.
5. Inadequate focus on one's own individual study plan.

The study concluded that learners on WBL courses learn from a combination of associating with fellow learners within the University, as well as their community of practice within the workplace;¹² great emphasis was placed on the verification of their learning amongst their peers giving them the ability and confidence to implement their learning within their companies.

The following describes a work-based project module which is available on the BA/BSc (Hons) by Learning Contract degree course:²⁹

[<www.gcu.ac.uk/scwbl/progs/ba_bsc.html>](http://www.gcu.ac.uk/scwbl/progs/ba_bsc.html)

Work Based Research Project – (60 credits)

The module allows you to undertake an in-depth study of a particular area of work activity, and demonstrate an ability to integrate the theory underpinning it with the workplace practice. You are expected to demonstrate an ability to conduct supervised research and produce a written report.

Learning Outcomes

On successful completion of this module students should be able to:

1. Design and plan a research project within the workplace.
2. Construct a work based project comprising an appropriate methodology
3. Construct a critical literature review
4. Generate a report based on data analysis and sound and relevant conclusions and recommendations for the workplace

Figure 4 – Glasgow Caledonian University work-based research project module outline

The work-based project outlined above utilises a student-centred approach, allowing the student to identify and act upon subject-knowledge and theory and the relation to their employment. It can be argued that the project outlined above is that of the traditional research project. However, the focus is repositioned from an academic environment to the workplace, allowing for the work-based approach.

Working on new or existing product development within a research and development role may prove an interesting route through which to base a work-based research project upon.

For further information, please visit Glasgow Caledonian University's "Scottish Centre for Work-Based Learning" website:

<www.gcal.ac.uk/scwbl/index.html>

University of Hull

An example of an established WBL module is that provided by the University of Hull as part of the FdSc Chemical Science, which shows the aims, learning outcomes and assessment method:

<www.courses.hull.ac.uk/modules/1011/06574.html>

Work Based Learning

Level: 5 Semester: 1 and 2 Credits: 20

Aims and distinctive features:

This module gives academic credit for learning that occurs in the workplace. Current knowledge will be identified and evidenced. New learning relevant to the needs of the student and employer will be identified along with learning opportunities and resources. The learning outcomes will be different for each student and will be relevant to a particular student and their employer. Outcomes will be defined in an individual learning agreement which will include details of how the outcomes are to be achieved.

Learning outcomes: Students should be able to

1. identify personal learning goals,
2. use a range of learning opportunities to fulfil learning goals, and
3. articulate learning undertaken in the work place

Learning and teaching strategy:

Flexible but nominally 200 hours of independent study, work place learning and tutorial support.

Assessment:

Portfolio of evidence (100%) [outcomes 1-3]

Indicative content:

Content will be different for each student and will be negotiated between student, tutor and employer. The tutor will ensure that the academic content is consistent with a module at this level.

Figure 5 – University of Hull work-based learning module outline

The above module, embedded within the second year of the current FdSc Chemical Science course at the University of Hull exemplifies the possibility of flexibility within work-based learning modules, which allows for an agreement between provider, employee and employer for the content of the

learning as well as for the outcomes and assessment that will take place. Once the learning outcomes have been agreed, the provider can take a more passive role (although instructing when required), allowing for both student-employee and employer the freedom to explore and develop their skills and portfolio of evidence.

An example work-based project from the University of Hull FdSc Chemical Science is shown below:³⁰

<www.hull.ac.uk/chemistry/module.php?number=06575>

Work Based Project	
Level:	Semester: 1 and 2 Credits: 20
Prerequisites: Work-based learning module	
Aims and distinctive features: This module aims to develop investigative skills in the context of the workplace. It aims to develop and demonstrate skills in (i) the analysis of a problem (ii) planning and organising a task (iii) exercising judgement in the light of observed and published data (iv) compiling a report (v) giving an oral presentation.	
Learning outcomes: Students should be able to	
<ol style="list-style-type: none">1. identify a problem of industrial or commercial significance.2. plan a strategy for its solution.3. carry out experimental plan.4. evaluate and interpret data and identify conclusions.5. report findings both orally and in writing.6. work safely in an academic and industrial context.	
Learning and teaching strategy: 80 hours practical work	
Assessment: Project plan 10% [outcome 1], literature review (20%) [outcome 2], review (10%) [outcomes 2-3] & oral (10%) [outcome 5], report (50%) [outcomes 1-6].	
Indicative content: The work-based project enables students to tackle an industrial based problem, to develop skills in experimental design, and to report the outcomes of their investigations in a meaningful way.	

Figure 6 – University of Hull work-based project module outline

The project module as outlined in figure 6, is an example of how a work-based learning project may be structured; specifically, within the “aims and distinctive features” section:

‘It aims to develop and demonstrate skills in (i) the analysis of a problem (ii) planning and organising a task (iii) exercising judgement in the light of observed and published data (iv) compiling a report (v) giving an oral presentation.’

This allows the learner to identify a problem within the workplace, potentially agreed upon by the HEI, employer and employee together. The learner must then organise their project through each stage through to assessment. There are two other key features to the module outline; the project has been designed to maximise the learner’s use of transferable skills at each stage, focusing on project management whilst stating that there will be 80 hours of practical work. This could be viewed as a prompt, focusing the learner and their employer to discuss and potentially implement existing project development or conduct new project development which will fit into the company’s aims and strategic goals.

University of Portsmouth

The University of Portsmouth has a history of producing and delivering successful work-based learning courses within their Learning at Work department through their “Partnership Programmes” since 1991. These programmes are based on four aspects:³¹

1. Accreditation of Prior Learning.

2. Learning Management.
3. Work-based learning projects.
4. Taught Units

Below is an example of the “Work-Based Learning 1 (60)” module at the University of Portsmouth:

<uws.port.ac.uk/unitwebsearch/displayUnitDetails.do;jsessionid=96251B1EF9887BCE489A3ACE89ACD45A?objectId=57874472>:

<p>Abstract Enables "fit for award" work-based Learning Outcomes to be accredited by volume at level 1 and count to the award as stated in the learner's contract.</p> <p>Notes Learning outcomes are assessed on a Graded basis following Partnership Programme work-based level criteria. History note: Work-based learning has been the core activity in Learning at Work awards through the Partnership Programme since 1991. Descriptions of these activities have previously been recorded in the Definitive Document and were introduced as Unit Descriptors for the first time in 2001. This Unit reformatted to Faculty of Technology standard September 2002.</p> <p>Requisites Statement Global: The student must have a work-based learning opportunity approved by the Mentor, Tutor and Unit Co-ordinator. There must be an approved Learning Contract integrating the proposed work-based learning into a coherent programme of study.</p> <p>Aims To enable new learning achieved in the workplace to be accredited where it is relevant to the award being sought.</p> <p>Learning Outcomes On successful completion of this unit, students should be able, at threshold level, to:</p> <ol style="list-style-type: none"> 1. In each individual case, project-specific learning outcomes will be defined by negotiation between the student, his/her tutor and the Learning at Work team. These specific learning outcomes will encompass the competences stated in the generalised learning outcomes 2 to 5. 2. Grasp of new technical facts, business principles and relevant work theory. 3. Understanding of the organisation of the work environment and its wider impact. 4. Ability to take responsibility for and apply best practice. 5. Work-based skills and capabilities <p>Syllabus Outline The topics covered in the unit will include</p> <ol style="list-style-type: none"> 1. Work-based learning specification, planning, resource analysis 2. Project or work-based activity management 3. Research and investigation 4. Analysis and evaluation 5. Presentation of recommendations, designs, reports, etc <p>Scheduled Activities (Hours) Tutorials & meetings with mentor</p> <p>Learning and Teaching Strategy The following details of each work-based learning unit are approved by the Work-based Learning UAB - Title and work-based project details - Resource requirements - Learning outcomes - Evidence of learning outcomes to be presented - Submission dates - Agreed volume and level of credits</p> <p>Assessment Schedule and Strategy Students will produce a variety of evidence, depending on the kind of work undertaken. All evidence will be specified in the relevant Learning Contract. Evidence will include a record of active project management throughout the period covered by the Contract, and a reflective review of the projected learning outcomes and their achievement. In general an amount of evidence equivalent to 8000 words will be produced. The student's personal tutor and mentor will assess/appraise the work, following the criteria for work-based learning as in "Drafting Your Learning Contract".</p> <table border="1"> <thead> <tr> <th>Assessment Type</th> <th>Weighting Factor</th> <th>Pass Mark</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Coursework</td> <td>100%</td> <td>40</td> <td>..</td> </tr> </tbody> </table>	Assessment Type	Weighting Factor	Pass Mark	Description	Coursework	100%	40	..
Assessment Type	Weighting Factor	Pass Mark	Description					
Coursework	100%	40	..					

Figure 7 – University of Portsmouth work-based learning module outline

The outline describes the requirement of an agreed Learning Contract, which is stipulated by student, mentor, the tutor as well as the unit coordinator. The learning outcomes emphasis the

gaining of transferable skills that are beneficial within the workplace; it is expected of the student to gather an understanding of business principles, as well as gaining “work-based skills” from the undertaking of the project.

For further information, please visit the University of Portsmouth’s “Learning at Work” departmental website:

<www.port.ac.uk/departments/academic/learningatwork/>

Middlesex University

The Institute of Work-Based Learning (IWBL) at Middlesex University offers specific degree courses ranging from undergraduate, postgraduate through to Master/Doctorate of Professional Studies (M/DProf) levels. The IWBL has provided an outline online for prospective students as to how their WBL courses are approached and developed, with their modes of delivery advertised as “on-campus, on-line & in-company” with teaching methods as blended and distance and within “Corporate Groups” whereby modules are delivered in-company by members of the IWBL. In-depth programme specifications, which are generic for all work-based learning type modules or projects, are available online.³²

<www.mdx.ac.uk/Assets/WBS%20Programme%20spec.pdf>

The IWBL offers undergraduate and postgraduate courses. Each has specific core modules:

BA/BSc Work Based Learning Studies programmes: core modules

In addition to the work-based project, you will undertake several of these core modules, according to which undergraduate award you are studying:

WBS 2803, Recognition and accreditation of learning: 15 credits

In this module, you prepare a claim for the recognition and accreditation of your learning. Credit may be awarded for:

- experiential and work-based learning
- university-level courses already undertaken.

You also write an essay in which you reflect on what you have learned from undertaking the module.

WBS 2812, Programme planning: 15 credits

In this module, you argue a case for the coherence of your proposed customised programme. You will need to:

- explain the reasoning behind each proposed module
- outline a preliminary idea/proposal for your work-based project
- discuss how your proposed programme will fulfil your own and your employer's objectives.

WBS 3835, Project planning and development: 30 credits

In this module, you will:

- learn about research methods appropriate to the workplace
- explore the issues of being an insider-researcher
- develop a detailed research proposal to support your planned project.

WBS Projects (undergraduate): 40 credits/60 credits for large projects

You will normally undertake a 20-credit project for a certificate, diploma or advanced diploma award. You can choose the topic for your project but it must always be relevant to your workplace activities. Your final report will include:

- a statement of what the project is about
- a rationale and contextualising information
- details about the methodology used to undertake the project
- an analysis of your findings.

Figure 8 – Middlesex University core modules for undergraduate courses

MA/MSc Work Based Learning Studies programme: core modules

In addition to the work-based project, you will undertake several of these core modules, according to which postgraduate (PG) award you are studying:

WBS 4802, Recognition and accreditation of learning: 10 credits

In this module, you prepare a claim for the recognition and accreditation of your learning. Credit may be awarded for:

- experiential and work-based learning
- university-level courses already undertaken
- You will also write an essay in which you reflect on what you have learned from undertaking the module.

WBS 4811 Programme planning: 10 credits

In this module, you argue a case for your proposed customised programme. You will:

- explain the reasoning behind each proposed module
- outline a preliminary idea/proposal for your work-based project
- discuss how your proposed programme will fulfil your own and your employer's objectives.

WBS 4835, Research methods: 30 credits

In this module, you will:

- learn about research methods appropriate to the workplace
- explore the issues of being an insider-researcher
- develop a detailed research proposal to support your planned project.

WBS Projects (postgraduate): 40–60 credits

The size of your project influences how many credits it attracts, but 60-credits are the most common award. You will normally undertake a 20-credit project for the certificate or diploma award. You can choose the topic for your project but it must always be relevant to your workplace activities. Your final report will include:

- a statement of what the project is about
- a rationale and contextualising information
- details about the methodology used to undertake the project
- an analysis of your findings.

Figure 9 – Middlesex University core modules for postgraduate courses.

The two courses outlined in figures 8 and 9 highlight the key work-based learning modules within the undergraduate and postgraduate courses. The first core module mentioned in both is for the accreditation of prior learning, allowing credits to be given toward the final qualification. A secondary important module is that entitled “Programme Planning”, whereby students customise their programme and propose a work-based project, both backed with reasoning to show how the chosen route is effective for both the learner as well as their employer.

For further information, please visit Middlesex University’s “Institute for Lifelong Learning” website:

<www.mdx.ac.uk/aboutus/Schools/iwbl/index.aspx>

University of Central Lancashire

The following descriptor is reproduced from “Workplace Module 1”:

<p>Module Aims</p> <p>This module will provide the student with the opportunity to demonstrate an understanding of the problems that arise with an organisational context, and apply their skills and knowledge to formulate effective solutions.</p> <p>Module Content</p> <p>Investigation/analysis of an agreed area of work-related activity relevant to the student’s course and personal interests. The focus and limits for each student’s investigation will be individually negotiated. The module is not limited to specific content or investigatory techniques. However, as part of the investigation students will be expected to:</p> <ol style="list-style-type: none">i. Identify, negotiate and agree a specific work related activityii. Identify the nature of documentation used in the work related activity, trace its use and development and assess its usefulness.iii. Identify the health and safety procedures affecting the particular activity they have agreed to investigate and assess the need for them.iv. Identify problems that arise in the organisation or in the course of the work and the solutions implemented.v. Apply some of the knowledge and skills being developed in modules studied in parallel and in completed modules <p>Investigations may take the form of a project that naturally leads to the production of some product or document (e.g. installation and commissioning of a piece of equipment or producing of a cost/pricing database) whilst others will take the form of investigatory journalism (e.g. comparison of methods for procuring equipment or for meeting service needs of buildings), and others still would be limited to a part of a larger activity or activities (e.g. the early stages of building design or production of contract documents for a number of projects). Therefore the portfolio may take a number of forms and could be supplemented by (or in principle could entirely consist of) a project report, video production, IT software application (such as a database), etc. A presentation is also required.</p> <p>Note that this module can be completed in employment or in a simulated work environment such as may be established in the class room (e.g. a simulated design office/studio, simulated school governor activity, series of field trips) or in the university laboratories.</p> <p>Learning Outcomes</p> <ol style="list-style-type: none">1. Demonstrate and understanding of workplace problems and documentation needs2. Identify and negotiate achievable but challenging or valuable work packages3. Apply independent research techniques and information to assist in remedying work related/organisational problems.4. Contextualise and apply knowledge and skills developed in other modules5. Demonstrate presentation and communication skills. <p>Teaching and learning strategy</p> <p>Investigation/analysis of an agreed area of work-related activity, requiring the student to identify that activity, its focus and limits, and agree methods of study through consultation with organisational representative and subject tutor; then to undertake the investigation, analyse the situation and report findings through a presentation of report/portfolio. Some input will be given to the class in the early stages of the module to (i) review the ICT module and help students select appropriate forms of communication and presentation, (ii) review the induction to the library and indicate useful reference sources that are commonly required; also guidance in approaching key workers from whom information can be gathered. The majority of the module is self-study but tutor discussion occurs at regular intervals, both by email and in person and provides guidance on meeting the learning outcomes. Supply of guidance package for the module.</p> <p>Indicative assessment</p> <table><tr><td>Portfolio and supplementary items</td><td>80%</td></tr><tr><td>Presentation</td><td>20%</td></tr></table>	Portfolio and supplementary items	80%	Presentation	20%
Portfolio and supplementary items	80%			
Presentation	20%			

Figure 10 – University of Central Lancashire work-based learning module outline

Key aspects of the module design here include the individualisation of the focus and limit of the investigation that the student would like to carry out. It is noted that one suggestion for the project is that of research which leads to the production of a product or a document; this could be compulsory depending on the module to assist in “selling” the foundation degrees to employers if there is some contribution through the course itself in the research and development nature of the learner’s role.

The outcomes themselves are positive for both the learner and for the employer, notably outcomes 2 and 3; an achievable work problem is identified by the student and attempts are made to solve the problem with assistance from both a workplace mentor as well as an academic supervisor.

UCLan also provides an in-depth overview and help sheet that assists students in understanding how to construct the portfolio of evidence as well as final project or product for the portfolio assessment type.

The above module is reproduced with permission from the University of Central Lancashire. For further information please refer to the module catalogue for the FdSc Nuclear Project Management & Programme Control, available on request through the Head of School of the School of Computing, Engineering and Physical Sciences.

Key points from module outlines

It is noted that there are several commonalities between the descriptors of the work-based learning modules and projects outlined. Several modules mention the need to discuss and agree upon a learning contract between the HEI, the learner and the employer. This is apparent in the modules from Northumbria, Hull, Middlesex and Portsmouth. This reiterates the relevance of having an agreed upon contract for all partners to ensure learning objectives as well as employer expectations are met.

To summarise, there are several factors that contribute to successful development of WBL:

1. Establish a learning contract between the HEI, employer and employee.
2. If possible, allow for the identification of an achievable work problem or problems that can be worked upon and solved as part of the learning experience.
3. Promote the need for work-based projects to involve working on current or new projects within the employers business.
4. Allow for the potential for accreditation of prior learning and prior experiential learning; this may be department or institution specify, but criteria are required to ensure learners understand what is required and accepted for accreditation.
5. Design modules and projects to utilise and develop learner's transferable skills.
6. Ensure that modules and projects are constructed to allow for student-centred learning practices.

This list is not definitive; there are many possible methods by which to develop and implement successful WBL scenarios. The list above draws out the similarities between several modules within the HE sector that may be beneficial to consider when developing work-based learning activities.

Implementation of work-based learning

Lineham and Sheridan¹¹ summarise key points for both employers and HEIs when considering the implementation of work-based learning modules and courses.¹¹

The following lists are replicated from Lineham and Sheridan:¹¹

HEIs:

1. Ensure that recognition of prior learning is an integral component.
2. Establish strong industry partnerships.
3. Involve the employer in the development of the programme; especially when designing work-based projects and assignments.
4. Develop customised programmes; allows for the expectations and needs of both employee and employer to be met.

Employers:

1. Encourage employees to engage in skills development.
2. Allocate workplace mentor to assist the learner.
3. Encourage employee responsibility toward their personal professional development.
4. Develop work-based projects and assignments with sense of purpose.

These short checklists provide a foundation on which institutions and employers can build in an attempt to coordinate with one another during the development of specialised courses and

modules. In the case of the Foundation Degree it is noted by Rowley that successful implementation is obtained by involving a range of partners, including employers, regional development agencies, Sector Skills Councils as well as other HEIs; it is suggested that this degree of partnership is difficult to maintain and should include input from those at strategic and operational levels.³³

Accreditation of prior and experiential learning

Even though the continual learning at and through work is considered learning, it is often overlooked because of its informal nature.⁹ Boud and Middleton believe that a recognition of this learning would allow for an enhancement in the work and the quality of working life.⁹ For adults re-entering education there is often a wealth of prior experience they can reflect upon and it is becoming more accepted that this experience requires acknowledgement. Hence, a demand has arisen for Accreditation of Prior Learning (APL) for previously assessed learning and Accreditation of Prior Experiential Learning (APEL), in which the knowledge is gained by experience and presented for accreditation.

Systems of APL are established worldwide, with unique acronymic titles depending on the country. It is widely being acknowledged that such recognition of learning steers higher education toward the industrial and business world.³⁴ However it should not be used or marketed as a fast-route to a qualification. A survey of 433 courses at seven higher education colleges in Ireland showed that 264 out of 433 courses gave credit and recognition for prior learning, a total of 61%.¹¹

There are distinctions between APL and APEL. As mentioned APL involves organised learning through which assessment or certification has taken place. The learning through APEL is related to skills, learning and knowledge gathered through experiences in the learners work, or life, which involves no certification. Both systems gather evidence relating to the learning as opposed to the experience.³⁵

The most common method by which to assess and accredit prior learning is by the employee/learner providing an in-depth portfolio of evidence through which they demonstrate developed skills and knowledge gained. This process may be easier for prior learning, due to the increased formal nature of certified training courses.

The steps required in the development of a portfolio can be based on both the UK and American APL models as depicted below:³⁵

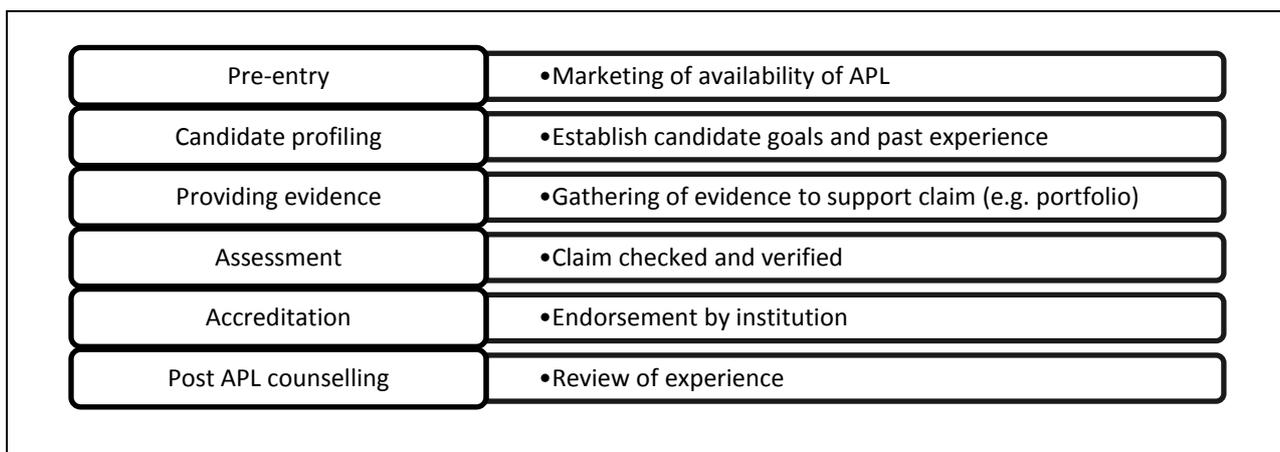


Figure 11 – UK model for the accreditation of prior learning.³⁵

Identify	•Identify HE level learning acquired through life/work
Articulate	•Show relevance to degree course
Document	•Verify and provide evidence
Measure	•Determine extent of learning acquired
Evaluate	•Decide if learnings meet acceptable standard and credit equivalence
Transcribe	•Record recognition of learning

Figure 12 – American model for the accreditation of prior learning.³⁵

The book “Good Practice in the Accreditation of Prior Learning” by Nyatanga³⁵ gives an extensive overview into good practice of the assessment of prior and experiential learning.

APL and APEL are important aspects for adult learners with ambitions and aspirations to achieve qualifications at a Higher Education level.

Perceived challenges of work-based learning

Developing work-based learning for incorporation into an academic qualification will not be without issues. Below is a selection of potential issues that may arise for each partner.

Issues for the HEI:

1. Potential shift from traditional, teaching methods, including the incorporation of a larger proportion of blended learning or wholly work-based modules than is generally common.
2. Due to the work-based aspects, the quality of student experience could differ between workplace establishments, arising from variables that are not within the control of the HEI.
3. The increased involvement of the employer in designing the courses could lead the HEI to perceive a reduction in control over the subject content and its quality.
4. The flexible nature of the course can lead to individual learning contracts for different students. Thus flexible learning outcomes must be negotiated. This also relates to the inconsistency of student experience.
5. Issues may arise over the identity of the assessor of the work-based learning modules and projects; if supervisors or mentors are provided in the workplace they may be involved in the assessment, or the employer may encourage independent assessors for sections of the course which they helped to develop.
6. Support for students in the workplace, or lack thereof; workplace supervisors may not be able to dedicate the time the learner’s need and this may impact on course completion and attainment.
7. All courses are modular but providers may not have the administrative and financial infrastructure or culture to enable involvement by module rather than by programme.

Issues for the employer:

1. Issues may arise through perceived irrelevancies of some content in relation to specific industries, potentially arising from a lack of industrial input into the course structure or the specialist modules.
2. The fast upgrading of technologies throughout all industries, coupled with a slow throughput of employees completing the course, may result in technical skills superseded upon graduation.
3. Employers reluctant to release students for long periods of time. This can impinge on day-release or block learning as well as the work-based elements.
4. Time and money may be required to support the work-based learning courses and modules within the workplace. Employers may mistakenly see these as “resource free”.
5. The balance between job-specific learning and obtaining a broader science education which may equip students for employment in another sector.

Issues for the student:

1. Work-based learning modules could increase the learner’s workload too much both in and outside the workplace.
2. Learners may find that not obtaining the desired levels of support from both higher education and employers may pose a problem; they may not know who to seek advice from.
3. Too little collaboration between higher education establishment and employer; neither establishment sure who is the main contact for assistance with work-based learning modules.
4. Module outlines and learning outcomes may be too diffuse if they are flexible enough for all students.
5. Students may not feel as though they are part of a community of learners.
6. Inadequate focus on individualised learning outcome or study plan.
7. Perceived irrelevance of certain topics over which they may have no control.
8. The balance between job-specific learning and obtaining a broader science education which may equip them for employment in another sector.

The list of anticipated issues outlined above is not exhaustive as other potential problems may arise during the implementation of work-based learning and attempts should be made to tackle any issues to the satisfaction of all stakeholders.

Summary

So far, this guide has provided definitions and examples of work-based learning, illustrated by several module outlines which have been analysed briefly. Issues have been highlighted that may arise for any of the three stakeholders involved; the employer, the employee/student and the HEI. Integral to constructing WBL experiences is an investigation of modes of assessment through which the student’s progress and learning can be monitored. Examples of modes of assessment that may be applicable to WBL will now be discussed.

Methods for assessing work-based learning

Work-based learning courses need a formal assessment strategy which should not be too dissimilar from those observed for traditional learning methods; the strategy should be developed to measure ability, skills and knowledge.⁷

The Learning and Teaching Support Network (LTSN) Generic Centre's publications, entitled 'Assessment Series' and 'A Briefing on Work-based Learning', uses the examples of practical assessment tools discussed here for work-based learning. The assessment strategies focus on problem-solving and provide the learners with ownership of the assessment process.⁷

All information including the assessment burden is reproduced from the LTSN report, 'A Briefing on Work-based Learning'.⁷ Further information has been adapted from the 'Designing Assessment to Improve Physical Sciences Learning' publication.³⁶ The assessment burden is considered to be the amount of time and effort required from the academic in order to fully assess the student's assignments and projects.

The Assessment Series can be found at:

<www.heacademy.ac.uk/resources/detail/ourwork/assessment/assessment_series>

A revised practice guide authored by Race discusses extensively the use of particular assessment methods; a selection of tips for each assessment type is included at the end of each section. For the full list of advice and tips, please see the Designing Assessment to Improve Physical Sciences Learning publication can be found online at:

<www.heacademy.ac.uk/assets/ps/documents/practice_guides/practice_guides/ps0069_designing_assessment_to_improve_physical_sciences_learning_march_2009.pdf>

Self and peer assessment

Self assessment is the involvement of learners in the critical evaluation of their own work, potentially even grading against set criteria or marking scheme set by an assessor. This method is often formative rather than summative and should promote reflection on the learning undertaken.

The assessment burden is considered low to moderate with the focus placed on learner self-reflection.

Assignments and projects

For WBL the assignment question or topic must link to the work content of the learner, with an assessment framework specified and provided to both assessor and learner.

Assessment burden for assignments and projects is high, with considerable assessor time required in the development of the assignment and agreement of outcomes with the learner; the assessment level would be even greater if individualised projects were undertaken by each learner enrolled on the course.

Memorandum report

This method requires a brief and succinct report on the results of any research undertaken in the workplace. Report writing can be considered a transferable skill and therefore utilising this assessment may be beneficial for learners.³⁶

Assessment burden is low, due to the brief and concise nature of the report.

Tips for the assessment of report-writing:³⁶

1. Give clear guidance regarding the format of reports.
2. Make explicit the assessment criteria for reports.
3. Involve students in assessing each others' reports.

Portfolios

Portfolios are extremely versatile tools in the collection and presentation of evidence and data to support achievement; in the case of work-based learning the portfolio should be constructed in such a way that all documentation, such as reports and correspondence, related to the project or module are included.

The portfolio is not envisioned as a stand-alone assessment collection but should be a reflective and reflexive summary by the student on what has been learned and how learning outcomes have been achieved, including references to work within their portfolio of evidence; this allows portfolios to reflect a learner's development and to effectively demonstrate progression.³⁶

An evidence portfolio can be developed by the learner to receive formal accreditation of prior learning and experiential learning that can be converted to academic credits.

Assessment burden is high as the portfolio requires a very large amount of effort on the behalf of the assessor. The combination of the reflective summary and large volume of reference and evidential material and the individuality of each portfolio makes assessment a difficult process, with difficulty in designing assessment criteria for portfolios. The assessments are more difficult to mark objectively due to the individuality and the nature of the work carried out by each learner.³⁶

Race provides advice on the use and assessment of portfolios:³⁶

1. Specify or negotiate intended learning outcomes clearly.
2. Propose a general format for the portfolio.
3. Specify or negotiate the nature of the evidence which students should collect.

Dissertations and theses

Both dissertations and theses are two of the more traditional academic methods by which to assess the understanding and capability of the learner, as well as their aptitude for conducting original research and presenting the conclusive findings.

Some may argue the relevance of large essay-style reports in work-based learning¹⁶ and this may stretch to dissertations and theses. Dissertations and theses are both original and lengthy pieces of individual work; including such assessment types as part of work-based learning could assist in improving and cementing the academic rigour of any qualification.

The assessment burden is very high; as the work is individualised and original, as well as involving a large volume of material. There may be a requirement for double marking which can extend the time needed for assessment, all added to the assessment burden.³⁶

Tips for the assessment of dissertations and theses:³⁶

1. Make sure that the assessment criteria are explicit, clear, and understood by the students.
2. Offer guidance and support to students throughout the process.
3. Help students to monitor their own progress.

Presentations

The use of oral presentations allows the learner to demonstrate communication skills as well as presenting their findings and their understanding of a project. Valid assessment criteria are required prior to commencing the presentations. Race believes that presentations are taken seriously by students, with further potential to allow for collaborative work with fellow learners, while also giving students the opportunity to develop skills required for oral examinations, future presentations or interviews.³⁶

The assessment burden may be relatively low as the assessor could grade the work or allow for peer assessment by the learning community who would be invited as the audience.

Tips for the assessment of presentations:³⁶

1. Make the criteria for assessment of presentations clear from the outset.
2. Get students involved in formulating or weighting the assessment criteria.
3. Involve students in the assessment of their presentations.

Poster displays

These are often used for the displaying of data gathered through group work and can be interesting for both assessor and student. Poster displays can be used in combination with group work to promote team-working, with the added benefit of allowing students to summarise key data and conclusions of their work concisely. Poster displays provide the potential for students to engage in peer-assessment, as well as helping students develop a wide-range of transferable skills.³⁶

The assessment burden is low, especially if peer assessment is used.

Tips for the assessment of poster displays:³⁶

1. Get students to peer assess each other's work.
2. Consider asking students to produce a one-page handout to supplement their poster.

Learning contracts

Learning contracts are drawn up between tutor or supervisor and the learner to construct individual learning plans and outcomes based upon the competency levels of the learner. Contracts can be drawn up to satisfy both the needs of the learner as well as their employer. The following criteria should be identified as outlined in "A Briefing on Work-based Learning":⁷

1. The learner's personal objectives.
2. Their professional objectives.
3. Any potential work-based projects or initiatives they wish to deal with.
4. Any potential APL or APEL claims.
5. Specification of an academically coherent set of modules or learning opportunities addressing the learning objectives.
6. An agreed timetable.
7. Evidence of support and resources that can be accessed at work and in the University.
8. Evidence of support as a learner within an organisational context (e.g. sponsor, line manager, mentor).

Assessment burden is deemed to be high.

How will the work-based learning modules be evaluating the student's progress?

The report of the Foundation Degree Forward reports the importance of work-based assignments and mentoring and how modules within courses need to be related to workplace practice.²⁴ To gain the credits for the qualification a certain degree of assessment is required to measure the progress of the learner in work-based modules, these could include:²⁴

1. Case studies.
2. Presentations.
3. Reports and project work.
4. Observation of practical work.
5. Personal development plans.
6. Evidence portfolios.

The role of the assessment may not be necessarily assessed by an academic member of staff but a workplace mentor/subject specialist.

Work-based projects are routinely assessed within standard sandwich courses, whereas the more open-ended problems encountered in the workplace are not as easy to assess.

Checklists of competences allow reflection on what and how learners achieve. Other possible areas to promote reflection include working diaries, documenting their roles and tasks and incidents which they have learned from and portfolios of work-based projects with evaluations.¹⁸

The Work-Based Learning Studies course available at the University of Middlesex is assessed using their internal learning, teaching and assessment strategies, with their main assessment strategies:³²

1. Essays.
2. Portfolios.
3. Negotiated learning agreements.
4. Project proposals.
5. Project reports.
6. Oral presentations.

Summary

The assessment methods discussed here may not be revolutionary or novel but they provide a number of methods through which assessment may be approached. In an educational environment all of the above may be utilised for traditional teaching courses but can readily be adapted for any WBL models within the three categories; learning for, at and through work.

Conclusions

Although there are many ways to describe and define work-based learning, the definition provided by Gray provides three key categories which encompass the many models of work-based learning:

*'A definition for the higher education level could involve any of the following work-based learning types; learning through work, learning for work and learning at work.'*⁷

The methods by which work-based learning courses can be developed are discussed in the literature, each definition or set of considerations building upon and reinforcing others. There is no rigid formula for designing work-based modules or resources and Merrill's First Principles of Instruction provide a set of guidelines which lay the foundations for successful module development.²³

1. Learners are engaged in real-work problems.
2. Existing knowledge is activated as a foundation for new knowledge.
3. New knowledge is demonstrated to the learner.
4. New knowledge is applied by the learner.
5. New knowledge is integrated into the learner's world.

One key challenge to overcome is that of employer-engagement; successful engagement with employers can lead to successful and fruitful courses for the tripartite of HEI, student and employer.

Summary of the benefits of work-based learning

To conclude, below are a range of benefits when work-based learning is incorporated well into higher education courses for all parties involved, benefits may be noticeable for the HEI, for the learner/employee and consequently their employer.

Benefits for the HEI:

1. Potential for a lower assessment burden.
2. Shared responsibility on learner tutorship.

Benefits for the learner:¹⁹

1. Develop work-based learning and work-related skills simultaneously.
2. Exploiting the workplace as a learning resource.
3. Existing knowledge activated as a foundation for new knowledge.

Benefits for the employer:^{24, 25}

1. Flexible, tailored to your needs.
2. Improved workforce performance and productivity.
3. Increased employee motivation – higher staff retention.
4. Meets skills shortages – grow your own workforce.
5. Work-based learning – little time off the job, minimal disruption.
6. Projects directly related to your business.
7. You [the employer] are closely involved in the delivery.
8. Potential to accredit company training programmes.

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Physical Sciences Practice Guides are designed to provide practical advice and guidance on issues and topics related to teaching and learning in the physical sciences. Each guide focuses on a particular aspect of higher education and is written by an academic experienced in that field.

The term work-based learning is widely used throughout the literature, academia and industry to describe a multiplicity of approaches by which one can learn through work. The complex nature of work-based learning can often lead to confusion when designing courses which aim to implement such an approach.

The aim of this practice guide is to give an overview of some of the current literature exploring work-based learning, as well as outlining case studies of work-based learning modules currently implemented at several Higher Education Institutions (HEIs) throughout the United Kingdom. This should provide the reader with a general idea of how work-based learning is approached and how module outlines can be created and adapted to appeal to HEIs, employers and learners.