



SECTORAL FRAMEWORK FOR FOUNDATION DEGREES

CONTENTS

INTRODUCTION

Purpose

The role of ConstructionSkills

ConstructionSkills and Foundation degrees

ConstructionSkills and a Foundation degree Sectoral Framework

1. INDUSTRY CONTEXT

1.1 Sector overview

1.2 Sector coverage

1.3 Nature and characteristics of the industry

1.4 Employment and labour requirements

1.5 Skills needs

1.6 Generic skills needs

2. DESIGN

2.1 Foundation degrees and FutureSkills

2.2 Priorities For Foundation degree development

2.3 Characteristics of Foundation degrees

2.4 Role of Foundation degrees within the industry

2.5 Articulation with other qualifications

2.6 Partnership working

2.7 Using National Occupational Standards

2.8 Key Skills

2.9 Skills and competencies

2.10 Towards an Industry Standard

2.11 Construction Skills Certification Scheme

2.12 Links to Professional Bodies

3. DELIVERY

3.1 Accreditation of Prior Experiential Learning (APEL)

3.2 Mode of delivery

3.3 Preparation and support for learning

3.4 Mode of learning and learning agreements

3.5 Work based learning and assessment

3.6 Work based mentors

3.7 Assessment

3.8 Lecturer expertise

3.9 Student tracking and monitoring

4. PROGRESSION

4.1 Individual progression

4.2 Progression routes into Foundation degrees

4.3 Progression routes from Foundation degrees

5. QUALITY ASSURANCE

5.1 Form and content

5.2 Industry qualifying systems

5.3 External linkages and reference points

6. PROMOTION

6.1 Strategy development

7. EVALUATION

7.1 Best Practice Network

ANNEXES

- Annex A** Skills profiles to support programme development
- Annex B** Skills gaps across built environment disciplines
- Annex C** Skills league table
- Annex D** Further guidance
- Annex E** ConstructionSkills Area Offices

USEFUL WEBSITES

LIST OF CONSULTEES

BIBLIOGRAPHY

INTRODUCTION

Purpose

It is acknowledged that the Foundation degree family is potentially a broad one that will include a number of models and approaches. However the purpose of this document is to articulate a sector view of the priorities for Foundation degree development and so inform and assist universities and colleges in the development of Foundation degree programmes that will attract employer support and endorsement. ConstructionSkills is committed to supporting the development of Foundation degrees in England, Wales and Northern Ireland.

The role of ConstructionSkills

In September of 2003 the partnership between the Construction Industry Training Board (CITB) GB, CITB Northern Ireland and the Construction Industry Council (CIC) was formally recognised with the granting of Sector Skills Council (SSC) status.

Becoming ConstructionSkills provides an excellent opportunity for each of the three partner organisations to build on their strong track record for facilitating sector training and, through their newly combined strengths, a unique platform to advance the learning and skills agenda for the construction industry. ConstructionSkills has close links with the other SSCs, most notably Asset Skills (Property, Housing, cleaning and facilities management), and SummitSkills (Building services engineering).

In terms of higher education ConstructionSkills has a vital role in providing the industrial and commercial dimension that will inform programme development, curricula knowledge and the skills identification that is required by a modern construction industry.

As an SSC, ConstructionSkills will be responsible for developing Sector Skills Agreements with key partner agencies such as higher education funding and quality assurance agencies in order to tackle skills issues within the sector. This will involve analysing sector needs, articulating the priority issues that employers wish to address and the collective action that will be taken in order to broker the deals and solutions to address the identified priorities. For ConstructionSkills there are 3 key challenges:

- **Improving Business Performance** through a multi-agency approach to business support, particularly for the very small businesses in the industry;
- **Qualifying the Workforce** by working with, and through the industry's major clients, supply chains and networks of quality assured training providers; underpinned by an accepted and widely implemented ConstructionSkills Certification Scheme;
- Improving the **Image and Recruitment** into the sector through the development of high quality aspirational products such as Foundation degrees and collaborative action to attract and retain more women and ethnic minorities.

ConstructionSkills and Foundation degrees

ConstructionSkills has supported the development of Foundation degrees since their inception in 2001 through the auspices of a best practice network.

ConstructionSkills is fully supportive of a more 'demand – led' system and views Foundation degrees as a key focus for this work. ConstructionSkills will have a crucial role in providing robust and up to the minute research and intelligence about the industry and in leveraging in demonstrable employer engagement and commitment to action that will support innovative programme design and delivery. The development of Sector Skills Agreements will provide the mechanism by which to integrate the planning and funding cycles needed to support the development of industry led Foundation degrees, but also provide the means by which partner capacity and flexibility to respond to changes can be increased.

ConstructionSkills and a Foundation degree Sectoral Framework

ConstructionSkills has received funding to develop this framework from the Sector Skills Development Agency (SSDA). ConstructionSkills has also been working closely with the Centre for Education in the Built Environment – part of the Higher Education Academy – and Foundation Degree Forward the new body responsible for supporting the development of the qualification.

From a ConstructionSkills point of view, it is critical that the Foundation degree is positioned as a vehicle which responds to changing working practices, needs and occupational structures within the industry. Programmes will need to reflect new industry practices that have followed the Latham (1994) and Egan (1998) reviews of the construction industry and the movement that is associated with Constructing Excellence. Identifying the right skill mixes for Foundation degrees will be crucial. Programmes need to appeal to those already in the industry who may wish to move into management and supervisory roles. Equally programmes need to appeal to a broad range of younger people who wish to pursue a career in the industry, but for whom 'traditional degree' or existing qualifications are neither attractive nor sufficiently aspirational. This framework should help programme providers to develop Foundation degrees that embody key themes and working practices within the industry.

Although there is no approved model for Foundation degrees, ConstructionSkills is keen to develop an industry standard that will underpin the development of the Foundation degree as a credible qualification within the industry.

1. INDUSTRY CONTEXT

1.1 Sector overview

There are about 175,000 construction companies in the UK, a number of which are large construction firms and household names. However, 92% employ less than eight people. These small to medium sized employers (SMEs) include professional firms, subcontractors, building material and component suppliers, which are in addition to the main contractor firms. Each play an important role in the labour supply chain and offer individuals both training and career development opportunities. They may recruit individuals who have already completed a programme of study or allow their employees the opportunities to combine study and work experience through a variety of different modes. Many of the larger firms have well established training programmes. The smaller firms' activities are often related to general updating and to meet specific needs, for example in meeting statutory requirements such as health and safety obligations or maintaining an awareness of current best practices.

1.2 Sector coverage

The construction industry's activities are concerned with the planning, regulation, design, manufacture, construction, maintenance and ultimate disposal of buildings and other structures. The sector also covers professional and design work (architecture, engineering and surveying) but excludes activity in other sectors such as real estate and building services engineering. ConstructionSkills covers the broad sectors of activity shown below:

Table 1: CONSTRUCTION INDUSTRY ACTIVITY

	Percentage share
Commercial building	33
Housebuilding – public and private sectors	23
Infrastructure	20
Non-residential building	14
Industrial building	10

1.3 Nature and characteristics of the industry

Construction work includes a wide variety of different activities in respect of the size and type of projects that are undertaken and the professional and trade skills that are required. Projects can vary from work worth a few hundred pounds undertaken by jobbing builders, to major schemes costing several million pounds and projects that include international joint ventures. Whilst the principles of execution are similar, the scale, complexity and intricacy can vary enormously. Historically the construction industry has many characteristics that separate it from all other industries, such as:

- the physical nature and impact of the product;
- the product is normally manufactured on the client's own premises;
- work is carried out on a project-by-project basis;
- a great many of the projects are bespoke designs;

- there is a lack of prototype models;
- some projects may be required over a large geographical area.

The output of the construction industry has traditionally been cyclical, moving from boom to bust over just a few years and this has made the provision of long term training solutions difficult. The traditional arrangement where design is a separate function from manufacture is another major issue facing the industry. Concentrations of activity occur in urban areas. London and the south-east, in particular, account for almost one-third of the industry's current workload.

1.4 Employment and labour requirements

The UK Construction industry has delivered a sharp increase in output over the last few years, growing faster than any other major sector of industry and this has put pressure on the industry's capacity particularly in terms of its labour market. The requirements for people working in built environment technical, management and professional occupations are shown below:

Occupation	Employment 2003	Employment 2007	Cumulative Requirement
Managers	233,980	265,340	31,360
Professional	117,270	133,550	16,280
Technician	52,100	59,780	7,680
Manual/Other	1,693,790	1,933,450	110,660
Total	2,097,140	2,263,120	165,980

ConstructionSkills has forecasted a growth in each of these occupational areas from 2003 up to 2007. The growth is required to:

- increase the shortfall of new entrants to the industry
- upskilling manual occupations
- replacing those who leave the industry through retirement
- replacing those who change occupations
- reflecting changes in the supply chain

1.5 Skills levels

When compared with other sectors in the UK, construction falls significantly below the public utilities and other professional and technical occupations but above transport, agriculture and distribution. Current skills levels within the industry are shown below:

**Table 3: SKILL LEVELS WITHIN THE CONSTRUCTION INDUSTRY, UK
2002**

	NVQ Level or equivalent		
	Level 2	Level 3	Level 4
All occupations	70%	46%	13%
Managers and senior officials	84%	64%	35%
Professional/associate professional	91%	78%	56%

1.6 Generic skill needs

Despite its reputation as a physically demanding industry, construction requires an increasingly diverse and flexible workforce. The proliferation of information technology (IT) and the rise in off-site manufacturing suggests that communication and organisational skills will be essential, alongside new skills of production control, assembly and quality control to handle a more mechanised approach to construction.

For managers, increasingly complex supply chains and site processes will require improved organisational, communication and IT skills. Dealing with the issues of collaborative partnership and multi-disciplinary approaches throughout the supply chain will require greater use of interpersonal and business skills associated with team building and management. A wider understanding of client needs will call for more market research and analytical skills.

The increasing prevalence of IT and electronics in products and processes has led to an explosion in the volume of data generated. Consequently, all involved in the construction industry will need to increase their capacity to collect and assimilate data.

Given the increasingly international nature of the industry, there will be a greater need for cultural awareness and language skills.

The move to a more sustainable approach to construction will require operatives to have an increased understanding and appreciation of energy efficiency, waste management and recycling issues. This will manifest itself in the 'greening' of site practices with the sorting of waste materials.

2. DESIGN

2.1 Foundation degrees and Futureskills

Given the overview in Section 1 the construction industry clearly faces a rapid change in its organisation, culture and practices. Many have analysed the construction industry and set out agendas for change. Recent developments and initiatives have encouraged the industry to both adopt the important cultural philosophy that customer satisfaction is inseparable from business goals and view performance in terms of safety, cost, quality and sustainability. The needs of the construction industry tomorrow are likely to be very different from those that are required and valued today:

- Clients are demanding change to a whole range of working practices, including the way in which work is procured and the need for increased interdisciplinary practice;
- The industry is developing new technologies and innovation with a greater emphasis on off-site manufacture;
- Evidence of changing needs and functions within occupations in the construction industry;
- More creativity is required in order to respond to Best Value requirements in public infrastructure projects and collaborative working eg Private Finance Initiatives, Public Private Partnerships;
- Greater attention is being given to employment conditions and methods of working as further evidence of change in culture and image;
- The economy, especially the European Union, is creating new opportunities for foreign competition both at home and abroad;
- There is an increased emphasis being placed on sustainable practices.

Despite the wide range of qualifications provided for those working or aspiring to work in the construction industry, there is a continuing imbalance between the supply and demand of skilled people in the industry. To improve productivity and competitiveness, the workforce must be able to operate within an increasingly complex environment. Better performing products and processes resulting from this need will require the skills of the workforce to change. Some old skills will be displaced completely, some new ones created, and other existing skills will need to be adapted.

Foundation degrees offer a ready made vehicle within which to develop solutions to many of these challenges. This is particularly true in respect of the four broad areas of innovation underpinning the Futureskills agenda:

- **Improving the performance of the construction industry** – via measured benchmarks;
- **Integration of the construction supply chain** - better integration of the design, management and realisation team, streamlined logistics, standardisation of the product and the process;
- **Addressing workforce skill shortages, demographics and legislation** - skills shortages and skills profile changes and the growth of niche skills in particular areas of activity;

- **Introducing new management styles to deal with these changes** - shifting the focus of emphasis towards problem avoidance rather than problem resolution, developing a higher calibre of leadership.

2.2 Priorities for Foundation degree development

As a result of this research a number of areas present themselves for Foundation degree development and ConstructionSkills is committed to supporting the design, development and delivery of the following programmes:

- a generic management Foundation degree that is work-based and supports employees moving from a technical role into a supervisory or management position.
- a project based/supply chain Foundation degree - the project based model will be applicable to a project specific set of sub-contractors and materials suppliers ie single project relationships. A variation on this theme will be a model suitable for clients with extended programmes of construction work where there will be multiple project relationships and where strategic partnering is a key issue. The latter to be developed in hotspots of activity around large construction projects, such as, the development of Terminal Five at Heathrow Airport;
- a professional development Foundation degree that provides various mixes of management, supervisory and business development skills covering a number of business scenarios related to SMEs and professional services.
- a Restoration Foundation degree.

Summaries of these models are provided at **Annex A**. More detailed models are being developed with industry sponsors and university and college partners.

2.3 Characteristics of Foundation degrees

Outlined below are the essential characteristics of Foundation degree programmes:

i) Employer involvement – employers have a central role to play in determining the technical knowledge and broader employability skills that form the basis of programmes. Unlike existing qualifications work-based learning and practices will be fully integrated within Foundation degrees. Employers, ConstructionSkills and where appropriate Professional Bodies and Regional Development Agencies, will also be involved in the regular review and ongoing endorsement of programmes.

ii) The development of skills and knowledge - must be relevant and underpinned by rigorous and broad-based academic learning. National Occupational Standards that have been prepared for occupations in the built environment will provide the basis for programme development alongside relevant key and generic skills.

iii) Application of skills in the workplace - must be demonstrated by those on Foundation degree programmes. The work based element will clearly be different for those employees already working in the industry, compared to those who may be starting out in the industry. In either case academic credit will be given for work-based learning and exemptions given for employees on programmes who have relevant industrial experience.

iv) Credit accumulation and transfer – employers and providing institutions should agree arrangements for credit accumulation and transfer arrangements that support multi-location delivery and recognise appropriate prior and work-based learning and experience. The successful completion of a Foundation degree will award students with 240 credit points. The credit weightings of individual modules will normally be those that are adopted by the university that is validating the Foundation degree. There are now within the different regions of the UK, groups of universities that agreed common credit frameworks to allow easier transfer arrangements.

v) Progression - must be guaranteed to at least one cognate honours degree programme and ideally there should be articulation of progression routes to relevant professional qualifications or to higher-level National Vocational Qualifications (NVQs).

2.4 Role of Foundation degrees within the industry

Many individuals working in the construction industry are disadvantaged in that their existing formal training has been missed or in some cases has been non-existent. The Foundation degree provides an opportunity for employees who have not achieved qualifications relevant to their employment needs and potential prospects within the industry to use and develop their work based skills and knowledge as part of a training package that is recognised throughout the industry and in further and higher education.

Conversely employers' greatest concerns with the labour force are the difficulties associated with recruiting sufficient skilled staff due to the buoyant nature of the industry and the problems with new employees who often do not have the level of skills required in certain occupations. This is not surprising since new trainees may not have the required on-the-job training that is expected. The introduction of a compulsory work based learning element in Foundation degrees is a major step in alleviating this difficulty.

The Foundation degree therefore represents a central plank in ConstructionSkills' drive to qualify the workforce.

Many construction companies seek to recruit appropriately qualified staff at a range of levels and provide a combination of training both in-house and externally through colleges and universities. However, since a majority of construction firms are small in size, they do not have the available resources to become directly involved in the latter processes, but often rely on these institutions to provide what is appropriately required within a national framework of qualifications. Foundation degree models that are more responsive to SMEs are a priority.

In addition, there are also opportunities for the development of Foundation degrees amongst major construction employers or groups of employers as part of their staff development and retention programmes. ConstructionSkills is a strong advocate of the development of a work-based model to support this concept, delivered flexibly including, as appropriate distance and web-based learning.

2.5 Articulation with other qualifications

The Quality Assurance Agency for Higher Education (QAA) has placed Foundation degrees at level HE2 alongside higher national diplomas and certificates (HND/C) on the *Framework for higher education qualifications in England, Wales and Northern Ireland*.

2.6 Partnership working

The awarding institution, a higher education institution with degree awarding powers, will exercise ultimate control and accountability in respect of both the quality and standard of the Foundation degrees awarded. However ConstructionSkills is a key broker in this process both in terms of ensuring that programmes are responsive to the needs of the construction sector and that employers have the capacity, resources and infrastructure to support the delivery of Foundation degree programmes.

Employers have key roles and responsibilities in the design and delivery of Foundation degrees, in particular, direct involvement in the provision of work-based learning. This will include both the planning, monitoring and review of work-based learning and consideration of an employee's existing and future job role. In either case assessment should be carried out against an agreed framework and support and guidance offered to the individual through a work-based mentor.

It is important that partnership arrangements between institutions and employers are formally agreed that identify the responsibilities and obligations of those involved, with clear timescales and critical success factors. Such an agreement will also provide a comprehensive audit trail for internal and external scrutiny. Partnership meetings will need to follow an agreed timetable and be clear about the scope, nature and timing of employer input.

The outcomes for any programme should satisfy as large a range of attributes as is possible and practicable. The learning outcomes should provide for as much transferability of skills to allow mobility amongst the workforce and provide individuals with the best possible basis for sustainable employment.

There would be considerable scope for those with industrial experience to qualify for academic credit. It would also be fair to expect that for younger people starting out in a career in the industry there might be a more significant emphasis on developing personal and professional skills that would support their access to employment. Programme providers should be aware of the *Skills Plus: Employability in Higher Education* project that is hosted by the Open University that identifies a wide range of higher level employability skills.

The knowledge and skills requirements will need to consider the requirements for final years study at honours level. Foundation degrees in construction and the built environment will need to determine and express their own learning outcomes within the respective programme specifications that are now a requirement of the Quality Assurance Agency for Higher Education (QAA).

2.7 Using National Occupational Standards

In order to ensure a breadth of responsiveness to the needs of the construction industry, the use of the National Occupational Standards (and where appropriate National Vocation Qualifications), in the development of Foundation degrees is vital. This will enhance the performance of individuals in the workplace by ensuring that their training and vocational education meets rigorous contemporary standards, and hence improve the performance of the industry. Occupational Standards provide a common currency to form an inter-locking system for the whole industry enabling:

- clearer paths of progression between academic, professional and vocational qualifying systems,
- the industry to develop the qualifications required to work in the industry,
- individuals to achieve the qualifications required to work in the industry.

Using Occupational Standards to develop Foundation degrees provides a number of benefits to:

Individuals -

- who are entering the industry for the first time, who can use Occupational Standards as personal development targets in conjunction with education and training programmes;
- have a wealth of experience, but who have never been able to get formal recognition of their competence, who can build up evidence of competence against Occupational Standards relevant to the work they are currently doing;
- have initial academic and professional qualifications within the industry, but who wish to move into other areas of the industry or update their professional development, who can use Occupational Standards as personal development targets.

Potential benefits to ***clients*** include:

- cost savings, reduced risk and uncertainty;
- confidence in standards of performance that will be achieved;
- improvement in project time scales;
- improved skills levels and performance giving better value for money;
- higher quality, consistency and reliability throughout the supply chain;
- improvement in customer – consultant – contractor – relationships;
- turning good practice into best practice.

Advantages for **Educators and Trainers** of using Occupational Standards include:

- curriculum focus - meeting industry and Professional Institution needs;
- the pattern of knowledge and key skills contained within the built environment higher level Occupational Standards can be used to develop tools for strategic education and training provision, course design and individual learning management;
- involving employers in course design;
- academic courses can be matched to Occupational Standards within particular NVQs/SVQs
- academic evidence can be utilized for NVQ/SVQ evidence;
- an academic programme can be developed to support and run in parallel with a higher level NVQ/SVQ;
- improving transparency of learning and its relationship with industry and other qualifications;
- parallel provision (academic programme and other qualification);
- widening access / reduce barriers;
- recording & accrediting work based learning;
- streamlining validation processes;
- increased market & assessment opportunities;
- co-operation in delivery of education & training;
- identification of where learning can best take place

Occupational Standards are developed in full consultation with industry and cover the full scope of competence. Six major functions - called key areas – have been identified. Professional, managerial and technical roles fall into key areas A, B, D, E and F. Area C contains all the practical construction, maintenance and technical operations or ‘hands on’ activities and were developed to reflect craft functions:

Key purpose	Key areas	Key roles
Establish, maintain and modify the use of the natural and built environment, balancing the requirements of clients, users and the community	A Formulate and implement strategies and policies for the development, improvement and use of the environment	A1 Review the need for changes in environment policies, operations and legislation and recommend strategy options A2 Test, develop, implement and monitor strategies, policies and proposals A3 Develop and implement statutory control and policy procedures
	B Develop proposals for the development, improvement and use of the natural and built environment	B1 Identify and agree project requirements and coordinate design development B2 Survey, map and test characteristics of the natural and built environment B3 Investigate factors affecting potential developments B4 Assess the financial and cost factors affecting development B5 Develop, present and agree project designs B6 Organise and prepare design documents
	C Construct, maintain and modify the natural and built environment	These Standards were developed to reflect craft functions and are separately available from CITB-ConstructionSkills
	D Initiate, resource and control projects for development and improvement of the natural and built environment	D1 Secure contracts for the supply of works, goods and services D2 Plan and implement construction and installation projects D3 Control contract quality, progress,

		costs and accounts D4 Determine the resolution of disputes
	E Facilitate the use of property, systems and services	E1 Value and assess property E2 Progress property transactions and agreements E3 Plan and control the use and maintenance of property, systems and services E4 Commission and assess the risks of engineering products
	F Contribute to the operational effectiveness of organisations	F1 Develop organisational strategies and policies and implement research F2 Manage operations, quality, information and administration F3 Plan and control organisational income and expenditure E4 Commission and assess the risks of engineering products F5 Assess the performance of people F6 Plan and manage the performance of small and medium sized businesses F8 Commission and assess the risks of engineering products F7 Commission and assess the risks of engineering products F8 Commission and assess the risks of engineering products

Core foundation skills for professionals in the industry - Common Learning Outcomes – have also been developed, which all construction professionals can achieve, and which encompass three topic areas: communication, group dynamics and professional awareness.

The sector's higher level Occupational Standards are centrally published in a database and available via the CISC website (refer to Useful Websites). All users have free access to the Occupational Standards. Chargeable access enables users additionally to operate advanced search facilities and operate select facilities enabling the selection of sets of identified Occupational Standards.

2.8 Key Skills

These skills are required to perform a wide range of tasks. They are transferable skills which play an important role in developing personal effectiveness in working life and in the application of particular vocational skills. They have been produced by the Qualifications and Curriculum Authority (QCA) and the Scottish Qualifications Authority (SQA). The six Key Skills are:

- communication
- application of number
- Information Technology
- working with others
- improving own learning and performance
- problem solving

Foundation degree programmes should also deliver and assess the full range of key and generic skills listed in the HEFCE Prospectus. Programmes should aim to develop interdisciplinary and multidisciplinary awareness based upon developing good practices such as that described on the Better Together website that is sponsored by Sheffield Hallam University (refer to Useful Websites).

2.9 Skills and competencies

Research has identified a number of issues in terms of skills and competencies across the various disciplines in construction and the built environment:

	Need improving In existing staff	Lacking among new applicants
General IT user skills	11	2
Professional IT skills	11	9
Communication skills	12	15
Customer and client handling skills	13	6
Team working skills	2	2
Foreign language skills	0	0
Problem solving skills	5	3
Management skills	11	6
Numeracy skills	0	3
Literacy skills	2	6
Technical and practical skills	31	48

A 'skill' is considered to be the ability to perform a task and is generally transferable across occupations; while a 'competence' is an ability to perform a technical task related to a specific occupation. A latent skills gap is one that is not apparent to the company or individual but prevents the organisation from creating a new opportunity or exploiting a technology. For example many construction designers have latent skills gaps relating to offsite construction; they do not have the skills to employ the technique so they do not.

Crucially - given that this is the main focus of Foundation degrees - technical and practical skills are the largest problem area in the construction sector. 30% of firms claim to have significant gaps in this area amongst existing staff – that is where employees do not have the skills or competencies necessary to do their job properly. This rises to 50% among applicants during recruitment – shortages caused because applicants lack required skills or competencies to do the job for which they have applied. This is further evidence of a mismatch in supply and demand. A lack of these types of skills is highlighted as a major problem by employers. There are a number of other priorities:

Problems with existing staff are perceived as being greater in:

- Professional and general IT skills
- Management and customer handling skills

Problems with applicants are perceived as being greater in:

- Technical and practical skills
- Literacy skills
- Communication skills

The nature of skills gaps and shortages varies with the size of firm, amongst the different built environment disciplines and within the different regions of the UK. The research also highlighted a number of other areas of concern across the different built environment disciplines and examples are listed in **Annex B**.

Additionally the following gaps in skills and competencies have been identified:

- Partnering arrangements including negotiation
- New technologies
- Off-site manufacture and prefabrication
- Safety, health and welfare
- Supply chain management
- Software applications, systems and development
- Understanding the client's business
- Business and finance
- Managing the design process
- Performance management
- Planning, scheduling and sequencing the works
- Budgetary control
- Knowledge management
- Application of new techniques
- Quality control
- Procurement management

2.10 Towards an Industry Standard

ConstructionSkills is involved in ongoing research to assess general management and specialist construction skills based on the National Occupational Standards.

Work to date suggests that the strengths of the construction industry are in the core skills relating to construction management; namely programme management, managing the construction team, construction methods and project completion. These are the skills required to react to a tender and solve the problems associated with delivering that tender. However the weaknesses of the industry are in the skills that are required for the future; namely proactive business development, design management, option and risk appraisal and business development. These are the skills to identify, understand and realise an opportunity.

This suggests that existing qualifications have focused on helping the industry to get better at what it does now, rather than broadening the skills mix to take on new challenges for the future. Foundation degrees offer a critical opportunity to recruit and develop a workforce that creates the future rather than one that reacts to the present.

The research relating to **general management skills** within the industry suggests that the industry needs to focus on forward planning, particularly

within the areas of financial, resource and business planning. Similarly, there needs to be a focus on the skills of the future namely knowledge management, IT and risk management. These are essential if the construction industry is to move into a future where clients expect their supply chains to carry more risk (PFI as an example); skills are short (requiring better resource management) and IT is more prevalent.

In terms of skills linked with **business development** the industry appears best at traditional “estimate and plan” approaches to sales; no surprise given that this is the sales approach required by the majority of clients. The challenge comes as clients move towards negotiated partnerships and other forms of procurement. Skills in this area that allow construction companies to create and understand opportunities - such as market understanding, presenting bids, creating opportunities, applying different construction techniques and risk management - are very important. Simple analysis of partnering (particularly long term strategic partnerships) suggests that three key skills are option appraisal, risk management and client understanding. The skills in understanding the market, presenting bids and dealing with different forms of contract are also critical.

The research has shown that a high proportion of the workforce is competent in skills linked with **design management** - the skills required to control and hand over a design. A lower proportion of those managing design are competent in the skills required to add value to a design (applying different construction techniques, working around design constraints, option appraisal and value engineering). These skills will have greater importance as the industry takes on more responsibility for design. The skills in which the lowest proportion of the design management team is competent impacts on design for safety and buildability of designs. The lowest recorded competence is in construction practice, safety management and value engineering. A combination of value engineering and option appraisal allow a design team to take out cost from a scheme by proposing more cost effective solutions than perhaps the client or developer suggests.

The picture is more encouraging with skills linked to **construction management** with a high proportion of those using construction management skills assessing themselves as competent. The areas of focus are cost management, plant management and procurement. Management is about how well the construction team is managed and developed as individuals. This is different from the management of processes described earlier.

The lower performing skills will adversely affect cost and delivery performance. Cost management, plant management, procurement and project start up are key skills affecting cost and delivery performance. The level of competence in this area may be adversely influencing the performance of companies.

Drawing all of the skills together it is possible to create a skills league table as shown in **Annex C**.

While an increase in the level of those competent in a skills area in which they have responsibility is always a good thing, there are a number of general issues that programme developers will have to consider when designing Foundation degree programmes in response to employer need:

- A good starting point is to determine the skills profiles associated with specific job roles. This requires differentiation between roles requiring the highest degree of generalisation, and roles that are more specific and specialised. For example Quantity Surveyors/Estimators responsibilities are concentrated in Supplier, cost and change management, estimating, contract understanding and procurement. Meanwhile, planning professionals present a largely complementary profile, with Market and Client Understanding, Option Appraisal and Construction Techniques foremost amongst their responsibilities.
- In order to be cost effective the programme will need to focus on improving skills that are comparatively widespread, yet comparatively incompetently undertaken. There will be skills where few people claim responsibility, and where there is a low level of competence. In contrast there may be tasks which are performed competently, but by comparatively few employees. The challenge is to identify the priorities for skills intensification (increasing the depth of knowledge amongst those who practice particular skills) and making a skill more extensive (increasing the proportion of people undertaking the skill).
- The relationship between the level of individual skill and the company skills profile is important too. For example while the safety skills areas should generally be undertaken by as large a proportion of the workforce as possible, environmental assessment may be better performed by a small team of specialists rather than everybody attempting to perform it inexpertly.

Research has identified a number of areas for industry improvement. Firstly the industry skills which have the greatest need for improvement in both the level of competence and the number of people undertaking them:

Safety management
Environmental Assessment
Presenting bids
Construction practice
Legal Skills

They are also potentially the areas for quickest wins from remedial action and significant boosts to productivity and effectiveness.

Secondly the skills where the emphasis should be on increasing the skills of those who undertake the responsibility, not to get more people to assume responsibility for those skills:

Risk Management
IT
Financial systems
Resource planning
Business planning
Market understanding
Contract understanding
Financial planning

The issue of increasing the extensiveness of the skills on this list is generally not a priority.

And finally skills which are of some concern, particularly when they are related closely to skills on the first two lists, but should not be the primary focus of the improvement agenda:

Cost management
Programme Planning
Plant management
Option appraisal
Procurement 1
People Management
People Development
Design handover
Construction techniques
Client understanding
Risk Management
Design constraints
Construction techniques
Creating opportunities
Knowledge management
Option appraisal
Project start 1
Value engineering

In addition to guidance on how Occupational Standards can inform curriculum development, additional work is being done to identify how Occupational Standards can be integrated into industry procurement processes and into industry performance initiatives to enhance industry performance through benchmarking competent teams and individuals.

2.11 Construction Skills Certification Scheme

The Construction Skills Certification Scheme (CSCS) is a register of competent operatives and craftspeople which has now been extended to potentially include ***all those who work on or visit construction sites***. CSCS has been supported by all the representative construction organisations, including the Construction Confederation, the Construction Industry Council, and the Trade Unions.

Construction personnel gain their cards by the achievement of relevant NVQs/SVQs, supplemented where necessary by the appropriate health & safety test. There are tests for each level, and they are delivered by means of computer-based multiple choice questions through driving test centres. For each newly approved card, there is a period of “industry accreditation”. This allows experienced practitioners to gain their cards as the scheme is put into place at the higher levels. As things currently stand, construction professionals have the following alternatives:

- apply through the industry accreditation route (while this remains open);
- apply through the NVQ/SVQ route;
- apply for a visitor’s card.

As a result CSCS must be a fundamental component of all Foundation degree programmes.

2.12 Links to professional bodies

Professional Institutions face issues that necessitate reconsidering how they can enable individuals from increasingly diverse backgrounds to access the professions whilst maintaining equitable standards of entry; how they can recognise a variety of ‘feeder’ qualifications for entry purposes; how they can respond to, and interrelate with the changing demands of industry, whilst operating efficient qualifying processes.

The acquisition of professional qualifications has, historically, provided an important recognition for many people working in the construction industry. In respect of Foundation degrees, the position of these bodies can briefly be described as follows:

- those that recognise the completion of a top-up degree as being acceptable for full corporate membership, subject to any requirement in respect of the recognition of professional competencies;
- those that provide for a route through their technical membership qualification;
- those that do not recognise Foundation degrees as being a part of their own frameworks.

There is a wide diversity of educational programmes associated with the built environment and many have undergone significant change in recent years as a result of both educational and industrial pressures. The process of change is often hindered by the long lead in time associated with the accreditation process and bias within some professional institutions towards traditional subjects. Some professional bodies are still in the process of developing a policy on Foundation degrees. However if new and innovative concepts are to be adopted it is important to address the strategic influence of professional institutions. The development of an industry standard is very important in this respect in terms of demonstrating the national credibility of the qualification.

3. DELIVERY

3.1 Accreditation of Prior Experiential Learning (APEL)

All institutions have specific admissions policies and selection criteria that are reflected in their UCAS admission profiles. Policies on recruitment and admissions will form a part of an institutions access and equal opportunities policy and practice. Diagnostic tests are also becoming more common to support students entering programmes without formal or relevant qualifications. Some institutions interview all potential applicants prior to them being admitted to certain programmes of study.

Staff dealing with large numbers of applications may not have the time or expertise to assess each applicant in a holistic way. It is also the case that the expense and complexity of some of the current admissions procedures represent a significant barrier to those considering work-based routes into higher education. The development of an APEL model that uses a more forward looking perspective for learners where previous skills, knowledge and experience is used as a starting point for engagement with Foundation degree provision is a priority.

It is expected that the vast majority of students will complete the entire programme of modules for the award of a Foundation degree. However, in promoting the concept of life long learning it is important that full recognition is given to an individual's past achievement. This might be through forms of structured learning or through the acquisition of competencies in the work place. This process will allow those without the formal educational entry requirements to be admitted to programmes and will also allow for possible exemption from individual modules.

3.2 Mode of delivery

If Foundation degrees are to be truly responsive to the needs of employers and those employees wishing to upskill, innovation and creativity in programme delivery is essential. Local and regional employers will want to influence delivery models that best suits the demands of their business and the needs of their employees. This will challenge those involved to design less conventional modes of attendance and delivery than with more traditional programmes.

The peripatetic and project-based nature of the industry means that the development of programmes that support multi-location delivery is a priority. Such a model is also likely to make the best strategic use of learning and teaching expertise. In any case modes of delivery are likely be variable, suiting individual circumstances, in helping to meet the learning outcomes of the programme and will include full-time, part-time, block release, evening only, weekend attendance or a combination of these models. Some modules may be delivered entirely through distance or off-site learning.

3.3 Preparation and support for learning

Individuals starting Foundation degrees will have a variety of different educational backgrounds and experiences. An effective strategy to support and guide those entering a Foundation degree programme that is consistent

with the individual's profile and the aims and objectives of the provision needs to be implemented. These will include, for some, the support required for a return to study after perhaps many years absence from formal education. All of those on Foundation degree programmes will require support with the particular aspects of work-based learning. It will be necessary for institutions to demonstrate that the participants are satisfied with the arrangements provided and this needs to be considered during the development of the programme.

Effective arrangements will be required to meet both the academic and personal needs of those on programmes. These arrangements will need to be in place to assist individuals during their admission and induction to the programme. It is important that individuals are fully aware of the expectations and commitments that are required and the arrangements should be clear and easily understood. These should include the provision of informative handbooks and guides and other relevant supporting literature.

Individuals should be provided with appropriate tuition in study techniques and assessment skills. These will include essay writing, report writing, seminar presentation, case studies and numerical analysis. Institutions will need to carefully consider whether they have the appropriate mechanisms in place to support the non-traditional students. These are likely to require additional individual personal tutoring, especially in respect of study skills and their return to learning needs.

Foundation degrees should be able to provide access to a full range of well-managed and maintained resources that are in line with current and future working practices in the construction industry and which extend beyond the institution into the work place.

At present, the proportion of the construction workforce that are women (9%) or from ethnic minorities (2.4%) is very much less than in most industries, and significantly lower than their representation within the UK working population (45% and 6.3% respectively). As there are more women in the population than men, and ethnic minorities are expected to account for half the growth in the workforce over the next ten years, these groups will form an increasingly important share of the labour force. Carefully designed and presented Foundation degrees offer a real opportunity to develop a flexible programme to attract ethnic minority and women into the industry.

3.4 Mode of learning and learning agreements

The mode of learning will include a combination of activities spanning formal teaching sessions in the institution to self-directed study off-site and in the work place. Within this range, individuals will undertake a variety of activities including assignments, examinations, project work, practical work, seminars, tutorials and work-based learning. A key is providing participants with a variety of enthusiastic learning experiences that encourage the development of a wide range of key and transferable skills, knowledge and understanding and the application of such knowledge through work-based activity and

assignments. The nature of the Foundation degree means that learning is both content based and process orientated.

Institutions that have access to virtual learning environments (VLEs) will wish to develop some modules that utilise these and can be accessed off site. This is especially useful to those who may be working some distance away from a college.

Those participating on Foundation degrees should be encouraged to maximise their learning using a personal development plan as a reflective learning tool in conjunction with any learning agreement. A number of schemes exist which enable individuals to record their learning and personal development achievements. Some of these are provided by industry bodies, professional organisations, or academic institutions. Individuals can choose what to record, use a freeform framework or criterion referenced framework depending upon which scheme they follow.

There are significant educational policy moves and requirements, including Quality Assurance Agency (QAA) guidelines, requiring all students undertaking education to have access to Progress File mechanisms. The Progress File recording system developed at Loughborough University and the University of Central England for undergraduates on programmes for civil engineering and construction related programmes known as RAPID, has been informed by the requirements of Professional Institutions and Occupational Standards or NVQs/SVQs.

These records can be used to clarify personal goals and provide a resource from which material is selected to produce concise personal statements (e.g. CVs and application forms) required by employers and admissions tutors as well as allowing candidates to develop electronic portfolios for NVQ/SVQs and/or professional membership requirements. The core features of the Progress File include:

- a range of recording processes in order to create and maintain records
- structured processes (which may be called Personal Development Planning – PDP) to develop the capacity of individuals to reflect upon their own learning and achievement and to plan for their own personal, educational and career development
- guidance materials and support structures to enable and encourage the learner to participate and benefit from this active learning process;
- opportunities within and outside the curriculum to acquire, develop and practice the skills necessary to engage in PDP;
- the process of personal development planning, including the setting of goals and identifying opportunities to develop.

PACE is a tool within RAPID which enables users to create and update their Curriculum Vitae. SPEED is a tool within RAPID to help users assess, develop and record their skills. Some institutions provide CPD assistance to their members through RAPID.

3.5 Work based learning and assessment

Work based learning uses the work place as a vehicle for learning. This allows those on programmes to critically reflect on practices and procedures that are employed, providing them with experiences of industry and commerce. It can also provide a mechanism for blended learning practices that are becoming an important feature of higher education.

A key feature of Foundation degrees is that it enables individuals to learn and gain credit for work-based activity. Employers are expected to play a significant role in the design of the curriculum including helping to select the modules for study. They should also be involved in the delivery, assessment and evaluation of the programmes.

There are a variety of different models available for work-based learning and thorough consultation will be needed in order to provide the evidence needed to identify how this aspect of the programme contributes to the individual's learning. The extent to which Foundation degree programmes are matched to Occupational Standards will affect work based learning and assessment. Such matching can form part of the system of evidence used for assessing candidates along with work-based performance evidence and direct assessor questioning.

Work based learning might take the form of a work placement for students on full-time programmes. For those who are already in employment, work based learning can be used to support the learning experience gained in the more formal setting. A learning contract that meets the identified development needs and demonstrates that the learning outcomes have been achieved and that the professional development plan is being followed will need to be formulated. It will be necessary to carry out this work in full agreement with an individual's work place mentor who will also be responsible for making an assessment of progress and achievements. Students should provide an investigative portfolio for assessment and be able to demonstrate their skills in oral presentation.

Whilst no minimum amount of work based learning has been specified, up to 25 per cent of the programme may typically represent this aspect of learning. Within a 240 credit framework, this indicates that up to 60 credits are allocated to this activity and ConstructionSkills would see this as a minimum requirement. Regional Development Agencies (RDAs) may be able to offer some support for work based learning activities especially amongst small and medium sized employers.

3.6 Work based mentors

ConstructionSkills has produced a good practice guide to mentoring and this can be provided on request.

3.7 Assessment

Occupational Standards provide for measurement/assessment of individuals by the provision of evidence of competent workplace performance and also of necessary underpinning knowledge and understanding.

The assessment procedures used on Foundation degrees aim to test the achievement and quality of the individual's performance in relation to the intended learning outcomes for each individual module. Foundation degrees will use a variety of methods to assess the knowledge, understanding and skills in the most appropriate and reliable way to satisfy the criteria of accuracy, validity and reliability. These may include, for example, personal development plans, presentations, portfolios, case studies, project work, peer and self assessment, in addition to the more traditional methods of assignments and written examinations. The Centre for Education in the Built Environment has provided appropriate guidance on assessment methodologies (refer to Useful Websites).

3.8 Lecturer expertise

Lecturers involved in the delivery of Foundation degrees should have qualifications at least equivalent to the qualification offered, but it is desirable that staff will have an academic qualification that is recognised as being higher. Lecturers generally should be members of a recognised professional body in the field of construction and the built environment.

Lecturers should have relevant industrial or commercial experience that is based on current consultancy or research practices, other scholarly work and activities and links with the industry. They should have recognised qualifications in teaching and learning in higher education and it may be appropriate for them to be members of the Higher Education Academy. The use of guest lecturers and master-classes, especially from practitioners, should be encouraged to augment these activities on a regular basis.

3.9 Student tracking and monitoring

It is important that individuals attend the programme sessions on a regular basis and institutions should have in place mechanisms to monitor attendance patterns. Where individuals fail to attend the programme regularly, personal or programme tutors should establish the reasons for the non-attendance. Persistent non-attendance, poor punctuality, failing to meet deadlines or attitudinal problems should be recorded in writing.

In addition, individuals should be provided with helpful written feedback on their work to assist them in monitoring their own performance on the programme. This feedback should identify individual strengths and weaknesses and indicate where marks have either been lost or gained on programme assignments. From time to time and, where appropriate, individuals should be requested to meet their personal tutor to discuss their ongoing progress on the programme, specific needs and future learning opportunities.

4. PROGRESSION

4.1 Individual progression

Currently, at the higher, professional levels of the built environment there is little overall coherent pattern for individual progression. For some entering the industry reliance is made on acquiring work experience, others rely on initial academic qualifications. Many people aspire to professional qualification. To attain this, individuals are traditionally required to achieve a prerequisite academic qualification, together with prescribed work experience or knowledge, professional examination or practice assessment. In recent years National and Scottish Vocational Qualifications (NVQs/SVQs) have been introduced and professional institutions are including them within their membership requirements. Additionally professional institutions are concerned that their members undertake appropriate Continuing Professional Development (CPD). This CPD has hitherto been largely input or time based.

The adoption of Occupational Standards enables individuals from any background to see how they might build on the work based knowledge and experience they have acquired and identify the areas of knowledge and understanding and experience which they need to meet industry competence requirements in order to progress. For this reason the Occupational Standards are of particular relevance to Small and Medium Enterprises (SMEs), individuals threatened with redundancy, returnees to industry, the under qualified, people needing retraining or required to be trained to fill skills shortages, as well as new recruits to the industry and people wanting to progress laterally or upwards within the industry. They offer clearer development pathways and provide a more industry responsive and integrated approach to sector training needs and provision. They are equally applicable to people setting out on a career within the industry, seeking to achieve initial qualification, wanting to further develop or diversify their careers, and people managing their Continuing Professional Development (CPD).

4.2 Progression routes into Foundation degrees

The Foundation degree can be designed to up-skill or re-skill employees or to attract new students into the construction industry. Potential students may:

- be progressing from school sixth forms;
- be progressing from programmes in a further education college;
- have some prior experience of higher education;
- have professional, commercial or industrial experience
- have completed modern apprenticeships
- already have work-based qualifications, such as, NVQ.

All potential students should be interviewed to ensure that the Foundation degree programme meets their needs and the needs of their employers. It is desirable that mature students are able to demonstrate evidence of their ability to study at this level, have relevant experience of the construction industry and have a genuine interest in the Foundation degree.

4.3 Progression routes from Foundation degrees

The successful completion of a Foundation degree is recognised as an award in its own right and Foundation degree graduates will have acquired the necessary knowledge, understanding and skills to make an immediate contribution in the work place across a variety of different occupations within the industry.

A number of undergraduate degree programmes have been developed to allow those with Foundation degree qualifications entry to the final year of programmes and which meet the requirements of the *Foundation Degree Prospectus*. At present the main opportunities for such a route are in construction and surveying, where top-up degrees are already available or are being designed.

5. QUALITY ASSURANCE

5.1 Form and Content

The internal quality assurance of Foundation degrees is a combination of that required by the validator of the degree and the institutions that are involved in delivering it. These must take into account the external quality assurance requirements of QAA. These internal mechanisms are comprehensive and include:

Validation: carried out internally by the institution delivering the Foundation degree and externally by an institution with degree awarding powers. This process should focus on quality, standards and resource requirements.

External examiners: these play an integral part in the quality assurance process providing annual reports on the quality of the programme and the standards of the students' work.

Review: this provides mechanisms for the regular review of the programme, usually on an annual basis. This may take the form of a report which would include an external examiner's report and written feedback from students and from employers. It will provide an action plan to demonstrate how the programme addresses issues that have been raised and how the programme will be enhanced in the following year. The review process will consider other matters, such as, staff development needs, the peer review of teaching and the role of scholarly activity. Of particular importance will be a review of work based learning in respect of meeting the needs of students and the requirements of the programme.

5.2 Industry qualifying systems

The higher levels of the industry broadly rely on three types of qualifying systems:

- academic and training programmes that develop and attest to acquisition of knowledge and understanding with some workplace performance application

- NVQs/SVQs that attest to acquisition of competence in terms of workplace performance and underpinning knowledge and understanding
- Professional Institution membership that attests to acquisition of professional competence in terms of workplace performance and underpinning knowledge and understanding applied ethically

There are clearly common features here. The problem for individuals, employers and qualifying organisations is recognition of different sub-types of qualifications that are specified in different terms and assessed in a variety of ways (but often with some similarities) and with different forms of quality assurance. Uncertainty about the dependability of others' systems often leads to the introduction of different artificial accreditation and recognition mechanisms (often based on inputs applicable only to one system). Foundation degree developers need to be mindful of these systems.

5.3 External linkages and reference points

National Subject Benchmark Statements have been conceived and developed to determine and prescribe the skills, knowledge and understanding to be included within higher education subject areas. Subject benchmarking is aimed at improving the capacity of subject communities to regulate their academic standards. It achieves this by creating subject-based information that can be used by teaching teams as a prompt for self-critical reflection and further development. It provides a set of reference points to show how the key features of a programme, its intended learning outcomes and the standards that derive from these intended outcomes, relate to what is deemed appropriate by the subject community. In doing so, it is argued, peer reviewers will be able to compare and evaluate more easily the standards achieved by students.

Institutions should relate what they are doing to appropriate institutional and external reference points so as to demonstrate that the basis for academic standards has validity beyond an individual teaching team. The range of internal and external reference points should ideally include the requirements of industry as expressed in Occupational Standards and NVQs. Subject Benchmark information is intended to provide the key source of reference information for the majority of subjects, but Quality Assurance Agency for Higher Education (QAA) recognises that there are other valid reference points and that in some curriculum contexts it would be inappropriate to apply subject benchmark information.

External quality assurance is provided by QAA since Foundation degrees are a designated higher education qualification. Neither the Learning and Skills Council, OFSTED or the Adult Learning Inspectorate will have any direct involvement in external quality assurance. Further guidance is provided in **Annex D**.

6. PROMOTION

6.1 Strategy development

The national promotional campaign undertaken by the DfES centred on the value of Foundation degrees and their distinctiveness when compared with other higher education programmes.

Many recent studies have highlighted that the construction and built environment sector faces major problems in relation to its need for qualified and competent people. The recruitment of substantial numbers of people into this crucial area of the economy is paramount if the country's infrastructure is not to suffer. For too long the industry has been beset by fragmentation and reliance on rigid traditional structures that fail to attract the best people and inhibit their potential for development and, hence, inhibit the performance of the industry generally.

The aim of this framework is to raise awareness of and create a dialogue around the issues highlighted in this document with providers and employers. It is important that Foundation degrees are developed around skills gaps that are critical to the future success of the industry and this raises challenges for providers and for industry which needs to take a strategic view of the skills within their workforce.

A greater awareness of the latent skills gaps that exist in the industry will allow Foundation degree developers to create and deploy programmes that respond to emerging opportunities within the industry and which supports more productive working practices.

ConstructionSkills is committed to working with colleges and universities in order to support offerings that address the skills gaps identified in this framework. Where suitable courses are being run they should be publicised to employers; where providers do not have suitable courses ConstructionSkills should influence them to change their offering.

ConstructionSkills area offices will also be able to offer advice and guidance on Foundation degrees and SSC related matters and details are listed in **Annex E**.

7. EVALUATION

7.1 Best Practice Network

ConstructionSkills is keen to support Foundation degree consortia in developing and promoting effective practice. A website has been set up to support the development of this framework and this will be revised and updated in the light of feedback. This will include emerging best practice on evaluation techniques, tracking and monitoring protocols and the collation of destination statistics and information.

Higher Education increasingly has to benchmark the outcomes of its programmes and to demonstrate the employability of its students. Occupational Standards reflect an industry/practitioner perception and

specification of competent performance in the workplace and as such can provide a valuable source and point of reference for the planning, design and development of vocational, academic and training programmes. The difficulty with such an approach has been to identify which of the Occupational Standards can best inform course providers and designers and to identify the knowledge, understanding and skills that underpins those specific standards.

Specifying performance and underpinning knowledge and understanding in this way allows clarification about what might best be delivered by FE/HE providers, what might be best delivered by employers and what support processes and materials they both may need. For FE/HE and training providers this opens up new opportunities to engage with employers to develop higher level programmes which focus upon work based performance and 'employability' and to clarify how they can best support training in the workplace.

ConstructionSkills will continue to run a Best Practice Network that will feed into ConstructionSkills' widening higher education brief as an SSC and will include the following activity:

- Brokerage of employer engagement in projects and initiatives
- Advising on higher level skills needs and emerging industry practice
- Advising on appropriate modes of delivery and support strategies
- Identifying best practice in learning and teaching
- Helping industry to adopt research and innovation
- Input of expertise e.g. research reports, Construction Industry Council, National Construction College
- Approval and development of work based assessment protocols.

Annex A Skills profiles to support programme development

Model 1 - Upskilling model

Rationale

- Raising the competitiveness of SMEs
- Reducing reliance on consultants
- Streamlining and integrating knowledge & skills-base
- Work-based route for buyers / estimators / planners or those moving up from project/site management with some project-based components (to reflect variations in access to experiential opportunities)
- Benchmarked against National Occupational Standards

Learning outcomes

Being able to:

- Establish a strategic basis for construction administration
- Identify and advise on market opportunities for construction services
- Respond to invitations for services and works
- Prepare and implement procurement programmes
- Control contract costs, quality and progress
- Create, maintain and enhance effective working relationships

Entry routes

- Requires a level of seniority sufficient to allow access to the key information they need to produce realistic analysis and proposals for action.
- Where experiential opportunities are limited:
 - supported through case study materials based on real contractual situations
 - access to mentoring support from those operating in a closely related contracting area.

Progression routes

- Cognate Honours programme
- NVQ/SVQ in Construction Contract Administration at Level 4,
- Diploma in Contracting Management
- Related professional awards.

Model 2 – Supply chain/project based model

Rationale

- Raising standards of site management practice for SMEs
- Supporting the competitiveness of SMEs in the supply chain environment
- Upgrading career development opportunities for site supervisors
- Work-based route with some project-based components (to reflect variations in access to experiential opportunities)
- Benchmarked against National Occupational Standards

Learning Outcomes

Being able to:

- Establish a strategic basis for construction operations
- Plan the works
- Establish and maintain systems and procedures to support operations
- Establish responsibility for operations and record information
- Procure resources for the works
- Monitor and control resources and quality standards
- Monitor cost and value of operations
- Create, maintain and enhance effective working relationships

Entry routes

- Requires a level of seniority sufficient to allow access to the key information they need to produce realistic analysis and proposals for action.
- Where experiential opportunities are limited:
 - supported through case study materials based on real contractual situations
 - access to mentoring support from those operating in a closely related contracting area.

Progression routes

- Cognate Honours programme
- NVQ/SVQ in Construction Site Management Level 4
- Professional awards, Specifically CIOB.

Model 3 – professional development model

Rationale

- Need for SMEs to develop a systematic basis for business planning and development.
- Aimed at those aspiring to set up or develop their business in the professional / technical services area.
- Addresses the problem that business skills are not normally a part of technical and professional education and training programmes at HNC/D or degree level in the construction sector.
- Work-based route or project-based route (dependent on access to experiential opportunities)
- Benchmarked against National Occupational Standards

Learning Outcomes

Being able to:

- Establish the business as a legal entity
- Determine the goals and objectives for the business
- Prepare a marketing plan for the business
- Plan production and the delivery of services
- Plan business finances
- Prepare a plan for personnel
- Produce an integrated business plan

Entry routes

- Candidates likely to be pre-qualified in the technical or professional areas in which the business is designed to trade
- Need to have a level of seniority sufficient to give them access to the business information they need to produce realistic analyses and forecasts.
- For those on project-based route – need to have access to case study materials based on real business situations
- Also access to mentoring support from those operating in a closely related business area.

Progression routes

- Cognate Honours programme
- NVQ Management at level 4
- Routes into professional qualifications in chartered institutions

Model 4 – Restoration model

Rationale

- Relevant to those who are already engaged as specialist contractors in building restoration, reflects the emergence of ‘Consultant / Contractors’, who are experts in a niche conservation field
- Also those who have started from an academic or professional base and acquired the craft expertise at a later stage.
- Deals with the complex regulatory environment and the competitive contractual environment inherent in high value conservation works.
- Work-based route with some project-based components (to reflect variations in access to experiential opportunities)
- Benchmarked against National Occupational Standards

Learning Outcomes

Being able to:

- Establish a strategic approach to restoration and the maintenance of buildings
- Assess the condition of property
- Specify restoration, repair and maintenance works
- Contract for restoration, repair and maintenance works
- Monitor, control and report on project activities
- Control contract costs, quality and progress
- Create, maintain and enhance effective working relationships

Entry routes

- Expertise in a specialist conservation field sufficient to allow access to situations that they will need to produce realistic proposals for action.
- Where experiential opportunities are limited:
 - supported through case study materials based on real contractual/conservation situations
 - access to mentoring support from those operating in a closely related contracting area.

Progression routes

- Cognate Honours programme
- NVQ/SVQ in Conservation Advice at Level 5
- Professional awards, Specifically CIOB or the IHBC

Annex B Skills gaps across built environment disciplines

The following are for illustrative purposes.

Architects

- Agreeing project requirements
- Coordinating design processes
- Preparing detailed designs

Engineers

- Coordinating the design process
- Preparing detailed designs
- Preparing and agreeing schemes
- Preparing design documentation

Surveyors

- Implementing procurement processes
- Commissioning /completing projects
- Resolving disputes

Annex C Skills league table

The colour coding highlights to which general area the skills belong. The league table is presented in the order of greatest competence; i.e. those skills at the top of the table have the largest proportion of competent respondents. The league table illustrates quite markedly that the expertise of the industry is largely concentrated in Construction Management skills (indicated in orange).

Perhaps of most concern is the fact that so many of the General Management skills, regarded as obligatory by the employers, were so badly performed by many of the respondents, with six of the twelve 'under 50% competence' skills being drawn from this category.

The weak skills also have much in common, even though they do span three of the four top level classifications. Financial, market comprehension and contractual concerns dominate the bottom ten, which despite being demonstrably influential on business health, might generally be regarded by managers concerned with 'getting the job done' as non-core skills. Feedback from the project group meeting suggests this may be a reason why the skills are comparatively sidelined and performance poor.

Two other key areas of absolute weakness are planning and risk management functions in general, and social responsibility areas such as environmental assessment and safety. The low level of skills in planning is an established weakness validated by industry consultations possibly linked to cultural preferences for 'fire fighting' over 'fire prevention'. The weakness in health and safety is of more concern, since it is an area which the industry has focused significant resources upon in recent years, and trailing indicators seem to have been generally moving in the right direction.

Code	Skills	General Area	% of sample who are competent	% of sample using this skill
COM11	Construction skills	Construction Management	96.5%	32%
COM16	Management	Construction Management	92.6%	48%
COM12	Programme management	Construction Management	88.9%	49%
COM14	Change management	Construction Management	87.8%	72%
COM9	Site safety	Construction Management	85.3%	41%
COM10	Construction skills 2	Construction Management	84.8%	44%
COM15	Project completion	Construction Management	83.9%	63%
COM7	Managing suppliers	Construction Management	81.2%	75%
CM6	Communication	General Management	80.3%	100%
COM6	Logistics	Construction Management	79.7%	34%
CD9	Design Control	Design Management	74.0%	29%
COM5	Procurement 2	Construction Management	72.6%	58%
COM4	Site set up	Construction Management	72.7%	41%
COM2	Project start 2	Construction Management	72.6%	54%
B8	Estimating	Business Development	71.9%	43%
CD11	Design Management	Design Management	71.5%	25%
COM13	Cost management	Construction Management	69.0%	60%
B9	Programme Planning	Business Development	68.3%	43%

Code	Skills	General Area	% of sample who are competent	% of sample using this skill
COM8	Plant management	Construction Management	67.0%	31%
B5	Option appraisal	Business Development	65.6%	55%
COM3	Procurement 1	Construction Management	63.5%	57%
CM4	People Management	General Management	63.0%	100%
CM5	People Development	General Management	63.3%	100%
CD10	Design handover	Design Management	63.2%	13%
CD3	Construction techniques	Design Management	62.5%	51%
B3	Client understanding	Business Development	61.6%	55%
B4	Risk Management	Business Development	61.5%	67%
CD2	Design constraints	Design Management	61.3%	43%
B6	Construction techniques	Business Development	60.1%	58%
B1	Creating opportunities	Business Development	56.7%	27%
CM8	Knowledge management	General Management	55.3%	100%
CD1	Option appraisal	Design Management	55.3%	46%
COM1	Project start 1	Construction Management	54.8%	51%
CD8	Value engineering	Design Management	53.5%	35%
CM7	Risk Management	General Management	47.7%	100%
CD5	Safety management	Design Management	48.5%	49%
CD7	Environmental Assessment	Design Management	46.9%	18%
CM10	IT	General Management	47.5%	100%
CM9	Financial systems	General Management	47.3%	100%
CM3	Resource planning	General Management	47.1%	100%
B10	Presenting bids	Business Development	46.6%	39%
CD4	Construction practice	Design Management	45.8%	40%
CM1	Business planning	General Management	42.3%	100%
B2	Market understanding	Business Development	40.4%	51%
B7	Contract understanding	Business Development	39.2%	57%
CM2	Financial planning	General Management	35.5%	100%
CD6	Legal Skills	Design Management	30.9%	40%

Annex D Further guidance

The procedures employed for an external review were originally set out in the *Handbook for the review of foundation degrees in England 2002-03* (QAA, 2002). The review of FDs under this method was completed in 2003. Future reviews will take place using a revised version of this handbook. Where a review includes provision in addition to FDs then the FD would normally be reviewed under Academic Review principles (QAA, 2000). QAA has also published an informative guidance note, *The inclusion of Foundation degrees in academic review. Guidance notes for institutions, review coordinators and specialist reviewers* (QAA, 2003). QAA has also published an *Overview report on Foundation degree reviews* (QAA, 2003).

In order to develop a better understanding of what underpins academic standards, those designing programmes and creating standards need to be more explicit about what it is that students are expected to learn. Institutions should relate what they are doing to appropriate institutional and external reference points that include the following:

- External reference points from the higher education system
 - The National Qualifications Framework
 - QAA Codes of Practice
- Institutional
 - Progress files
 - Level descriptors
 - Programme specifications
 - Key skills policies
 - Staff research
- Subject disciplines
 - Subject benchmarks
 - Professional or statutory body requirements
 - National Occupation Standards

Of particular importance is the *Foundation degree: qualification benchmark* (QAA, 2002) that describes FDs as integrating academic and work-based learning through the close collaboration between employers and programme providers. This builds on a long history of design and delivery of vocational qualifications in higher education.

Annex E ConstructionSkills Area Offices

North East and Cumbria

2nd Floor, Tower House,
St Catherine's Court,
Sunderland Enterprise Park,
Sunderland, Tyne and Wear SR5 3XJ
Tel: 0191 516 3900 Fax: 0191 516 9978

North West

10/12 Waterside Court,
St Helens Technology Campus,
Pocket Nook Street,
St Helens, Merseyside WA9 1UA
Tel: 01744 616004 Fax: 01744 617003

Yorkshire and The Humber

2nd Floor, Milton House,
Queen Street, Morley,
Leeds LS27 9EL
Tel: 01132 521966 Fax: 01132 380185

Midlands

Belton Road Industrial Estate,
20 Prince William Road,
Loughborough, Leicestershire LE11 5TB
Tel: 01509 610266 Fax: 01509 210241

South West

7 Kew Court, Pynes Hill, Rydon Lane,
Exeter, Devon EX2 5AZ
Tel: 01392 444900 Fax: 01392 445044

East

1a Peel Street,
Luton, Bedfordshire LU1 2QR
Tel: 01582 727462 Fax: 01582 456318

Greater London

Walker House, London Road,
Riverhead, Sevenoaks,
Kent TN13 2DN
Tel: 01732 467300 Fax: 01732 460561

Southern Counties

First Floor, Eastleigh House,
Upper Market Street,
Eastleigh, Hampshire SO50 9FD
Tel: 023 8062 0505 Fax: 023 8061 2056

Wales

Units 4 & 5, Bridgend Business Centre,
David Street, Bridgend Industrial Estate,
Bridgend, Mid-Glamorgan CF31 3SH
Tel: 01656 655226 Fax: 01656 655232

Northern Ireland

Catherine McGeady
cmcgeady@careers.citbni.org.uk

Scotland – Foundation degrees are not currently available in Scotland.

USEFUL WEB SITES

Asset Skills www.assetskills.org

CEBE www.cebe.ltsn.ac.uk

CIC Occupational Standards www.cisc.org.uk

ConstructionSkills www.citb-constructionskills.co.uk

Construction Industry Council www.cic.org.uk

Sector Skills Development Agency www.ssda.org.uk

Constructing Excellence www.constructingexcellence.org.uk

Department for Education and Employment www.foundationdegree.com

Foundation Degree Forward www.fdf.ac.uk

Inter-Professional collaboration: Simulating Partnership working in the Built Environment www.bettertogether@shu.ac.uk

SummitSkills www.summitskills.org.uk

LIST OF CONSULTEES

Patricia Ambrose SCOP

John Barr City & Guilds

Andy Bradburn Aimhigher

Elizabeth Brookfield BIAT

Mike Canter Anglia Polytechnic University

Ben Cartwright CITB ConstructionSkills

Helen Connor Council for Industry in Higher Education

Len Conway Lambeth College

Alan Cornthwaite Bolton Institute

David Cracknell Construction Industry Council

Julie Cross University of Central Lancashire

David Cummings University of Kent

Penny Dawson QCA

Angela Dean University of Derby

Avril Fox University of Ulster

Malcolm Firth Leeds College of Building

Jane Gardner DfES

Kevin Gilliam NEWI

Sue Goodwin CITB-ConstructionSkills

Paul Grayson Hull College

Les Greenacre CITB ConstructionSkills

Leigh Hackel SSDA

Sue Hobbs Constructing Excellence

Steve Houchin Kingston University

Julian Humphrys CITB-ConstructionSkills

Brian Jones University of Westminster

Terry Kivlin CITB ConstructionSkills

Mike Lambourne Mid-Kent College

Richard Larcombe Institute of Civil Engineers

Margaret Lawson Foundation Degree Forward

Robin Limpkin South Birmingham College

Derek Longhurst Foundation Degree Forward

Diane Marsh St Helens College

Gerald Naylor Coleg Sir Gar

Fred Okdone Stoke-on-Trent-College

David Pearce Leeds Metropolitan University
Michael Penton CNWL
Beverley Peters CITB-ConstructionSkills
Stephen Plant Electrical Contractors Association
Andrew Platten University of Central Lancashire
Chris Pratt University of Coventry
Alistair Robertson 5S Consulting
Robin Rolfe Conference on Training in Architectural Conservation
John Ryan University of Glamorgan
Philip Sargent Nottingham Trent University
Wendy Stubbs QAA
Jeff Thomas Construction Confederation
Fred Titterington T5 Co-ordinator CITB-ConstructionSkills
Rob Tovey RICS
Mark Tree Colchester Institute
Philip Walden University of Portsmouth
Jane Waldron South east Essex College
Judith Walker Institute of Highway Incorporated Engineers
Sheila Weeden University of East London
Clive Weston Accrington and Rossendale College
Dennis Wilkinson CIOB

A large number of employers have informed the research which appears in this framework. Many other discussions have been held in respect of individual sponsorship of Foundation degree related programmes.

BIBLIOGRAPHY

CIC (2003) Occupational Standards for Professional, Managerial Technical Occupations in the Built Environment. Construction Industry Council.
CIC. (2004) Built Environment Professional Services Skills Survey 2003-04. ConstructionSkills
CGLI (2003) Further Education and higher education: Working together to deliver foundation degrees. City & Guilds of London Institute.
CGLI (2003) Templates for Developing Foundation Degrees. City & Guilds of London Institute.
CIOB (2002) New Educational Framework. Chartered Institute of Building.
CITB (2001) Construction and the Built Environment Foundation Degree National task Force: Market Research Report. Construction Industry Training Board.
CITB (2001) Skills Foresight Workshops Report. Construction Industry Training Board.
CITB (2002) Attracting and Supporting Graduate Entry to the Construction Industry. Construction Industry Training Board.
CITB (2002) Higher Level Occupations in the Built Environment. Construction Industry Training Board.
CITB (2004a) Supporting Learners: A good practice guide to mentoring. ConstructionSkills.
ConstructionSkills (2003) Construction Skills Foresight Report 2003. ConstructionSkills.

ConstructionSkills (2003a) Construction Skills Business Proposition: Market Assessment.

DfES (2003) An Introduction to Foundation Degrees. Department for Education and Skills.

DfES (2003) Foundation degrees: Meeting the need for higher level skills. Department for Education and Skills.

Egan J. (1998) Rethinking Construction. Department of Environment, Transport and the Regions. HMSO

5S Consulting (2003) Scoping a Foundation Degree Framework for the Construction Sector. 5S Consulting.

HEFCE (2000) Foundation degree prospectus. The Higher Education Funding Council for England.

HEFCE (2001) Foundation degrees: report on funded projects. The Higher Education Funding Council for England.

HEFCE (2003) Information on quality and standards in higher education. The Higher Education Funding Council for England.

LSC (2004) National Employers Skills Survey, 2003. Learning and Skills Council.

Latham M. (1994) Constructing the Team. HMSO.

Longhurst D. (2003) Foundations to Quality. Foundation Degree Forward.

Loughborough University (2000) Recording Academic Professional and Individual Development. Loughborough University.

LTSN Generic Centre (2001) Personal Development Planning. Learning Teaching Support Network Generic Centre.

LTSN Generic Centre (2001) Assessment. Learning Teaching Support Network Generic Centre.

QAA (1999) Guidelines on the Quality Assurance of Distance Learning. The Quality Assurance Agency for Higher Education.

QAA (2000) Handbook for academic review. The Quality Assurance Agency for Higher Education.

QAA (2000) Guidelines for preparing programme specifications. The Quality Assurance Agency for Higher Education.

QAA (2000) Subject benchmarks: Building and Surveying. The Quality Assurance Agency for Higher Education.

QAA Codes of practice for the assurance of academic quality and standards in higher education. The Quality Assurance Agency for Higher Education.

- Section 1: Postgraduate research programmes (1999)
- Section 2: Collaborative provision (1999)
- Section 3: Students with disabilities (1999)
- Section 4: External examining (2000)
- Section 5: Academic appeals and student complaints on academic matters (2000)
- Section 6: Assessment of students (2000)
- Section 7: Programme approval, monitoring and review (2000)
- Section 8: Career education, information and guidance (2001)
- Section 9: Placement learning (2001)
- Section 10: Recruitment and admissions (2001)

QAA (2001) The framework for higher education qualifications in England, Wales and Northern Ireland. The Quality Assurance Agency for Higher Education.

QAA (2001) The framework for higher education qualifications in Scotland. The Quality Assurance Agency for Higher Education.

QAA (2001) Guidelines for HE Progress Files. The Quality Assurance Agency for Higher Education.

QAA (2002) Handbook for the review of foundation degrees in England. The Quality Assurance Agency for Higher Education.

QAA (2002) Foundation degree: qualification benchmark. The Quality Assurance Agency for Higher Education.

QAA (2003) Overview report on foundation degree reviews. The Quality Assurance Agency for Higher Education.