



A subject-based aspect report on provision in Scotland's colleges by HM Inspectors on behalf of the Scottish Funding Council



**Construction crafts**  
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# 1. Introduction and methodology

## Introduction

The HM Inspectorate of Education (HMIE) publication, *External quality arrangements for Scotland's colleges, September 2008*, specifies that HM Inspectors (HMIs) will produce a number of subject aspect reports over the four years 2008-12. These reports complement in a subject-specific context the generic evaluations of learning and teaching in HMIE's reports of colleges. Colleges should act on the recommendations contained in these reports. College inspectors will monitor action towards implementation of these recommendations as part of their normal dialogue with colleges, and will wish to discuss issues arising from subject aspect reports during annual engagement visits. In preparing this report, inspectors visited a sample of eight colleges, drew on the published findings of external reviews of colleges, and examined other relevant publications and reports. They have consulted with key stakeholders, including the Scottish Qualifications Authority (SQA), Sector Skills Councils, employers and other organisations. This report evaluates the quality of college provision in construction crafts including plumbing, but excluding both electrical and gas installation.<sup>1</sup> It includes Skills for Work programmes at SCQF levels 4 and 5, but excludes construction technician and management programmes. Programmes covered by this report are offered at levels 4 to 7 of the Scottish Credit and Qualifications Framework (SCQF).

## Methodology

Each college in the sample of eight was visited twice during the fieldwork stage. During the visits, inspectors interviewed college managers, staff and learners, and completed 64 observations of learning and teaching in workshops, classrooms, learning centres and project areas. Telephone conversations were held with 29 employers and 25 representatives of community organisations including education authorities and secondary schools with whom the colleges work. Separate meetings were held with representatives of *ConstructionSkills*, *SUMMIT Skills*, Scottish Building Federation, the Scottish Building and Apprenticeship Training Council (SBATC), the Scottish Painting and Decorating Apprenticeship Council (SPADAC), SQA, Historic Scotland, the National Specialist Contractors' Council (NSCC), and the Scottish and Northern Ireland Plumbing Employers' Federation (SNIPEF).

After the visits, HMIs convened a focus group of teaching staff involved in the fieldwork for the report to share their experiences and to discuss the findings. In addition to the evidence obtained from the eight colleges that participated in the fieldwork stage, HMIs also drew on the evaluations contained in the published review reports of 24 colleges between 2004-08. Evidence from these reviews has helped to identify areas of progress as well as to highlight issues that continue to require attention. Additionally, Sector Skills Councils' reports were also included as part of the wider reading for this report. The report includes recommendations and examples of excellent practice in named colleges to demonstrate approaches that could be adopted by other colleges.

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<sup>1</sup> Appendix 2 (page 25) identifies the 12 craft disciplines covered in the visits to colleges

## 2. Summary of key findings

Construction craft provision in Scotland's colleges is characterised by many strengths:

- Across the sector, colleges work effectively in partnership with *ConstructionSkills*, SNIPEF, local councils and other organisations such as Historic Scotland to provide a comprehensive range of Modern Apprenticeship programmes in construction.
- All colleges maintain good links with industry. Many have active advisory boards that provide an important way of aligning provision to meet employer needs.
- Colleges are responding well to the downturn in construction activity by providing greater flexibility in the delivery of programmes to meet employer needs. Staff design programmes with flexible entry and exit points to help learners move and progress between programmes, including between college-based and work-based provision.
- Colleges work effectively in partnership with local council education departments and secondary schools to deliver Skills for Work and other programmes that provide vocationally relevant studies to enhance the curriculum of young people from local schools. They provide a comprehensive range of introductory programmes in construction, which offer progression through to craft, advanced craft and HN programmes.
- Colleges work effectively with *ConstructionSkills* and SNIPEF to support the many apprentices who have lost their job during the current downturn in the industry.
- Colleges promote equalities effectively through their programmes. Staff ensure that learning and teaching materials are suitably inclusive. The majority of colleges provide craft-based learning experiences for people with mental health issues, physical disabilities and sensory impairments that build confidence and improve life chances.
- Almost all learners are well motivated and engage fully in learning activities. Most are confident in their use of tools, materials and equipment and undertake a good range of practical learning activities. Most learners make good use of ICT-based resources to enhance their learning and work independently.
- All learners make good progress in their programmes and apprentices gain from *catch-up* opportunities to compensate for periods of missed attendance due to pressure of work on site. They reflect systematically on their learning and the progress they make using their portfolios and individual learning plans.
- Most teaching staff are enthusiastic, experienced and apply their professional and subject knowledge well to enrich their teaching. They support learners well in workshop-based practical tasks. Throughout classes, teaching staff promote industry standards in practical tasks.

- In almost all lessons, learner-staff relationships are very positive and mutually respectful. Most staff plan lessons systematically and effectively. They set clear objectives and agree these with learners. They support the development of learners' core skills in lessons.
- In all colleges, tools, equipment and materials support learning very well. Most teaching accommodation provides a very good working environment for learners. Several construction departments receive substantial donations of equipment and materials from industry and this helps ensure learners have access to the latest developments in industry.
- In most classes, teaching staff take opportunities to emphasise the importance of recycling materials to minimise waste. They emphasise the importance of good working practices and give close attention to health and safety matters.
- In all colleges, retention and attainment rates are high across the industry-based craft programmes. In all colleges, retention rates for most Skills for Work programmes are high.
- Across the colleges, the standards of practical and written work are consistently good. Many learners achieve high standards in practical craft projects. Learners participate in skill competitions and some colleges are successful in achieving high levels of success. Staff use competition success as part of their improvement strategies to motivate learners to achieve the best they can.

However, we noted a number of areas for development to improve the experiences of learners:

- In most colleges, the design of the full-time pre-vocational and introductory programmes does not take sufficient account of the reduced opportunities for employment as an apprentice in the industry. There is opportunity to develop a broader range of learner skill sets in areas such as employability, citizenship, leadership, and health and safety. In only a few colleges do learners gain from a work experience placement as part of their introductory programme.
- In more than a few colleges, learners on pre-vocational programmes do not receive certification for each of the core skills of *numeracy*, *communication* and *information technology*.
- While in most colleges there are some early developments in sustainability generally and renewable technologies in particular, in all but a few colleges there is insufficient focus on the essential knowledge, skills and behaviours that learners require.
- While there are some interesting developments in staff use of ICT to enhance their teaching, overall there is scope for more development in this area as resources become more widely available. ICT provides opportunities to add variety to the range of teaching approaches, promote independent learning and challenge for learners.

- In some classroom-based lessons, there is insufficient variety of learning activities, with the teacher doing most of the work and learners being observers rather than active participants.
- Across the colleges, attainment rates in more than a few Skills for Work programmes are low with several learners not achieving the required criteria for success. Retention rates are also low in more than a few of the full-time introductory programmes.
- In most colleges, arrangements for tracking learner destinations from introductory programmes are not systematic enough to inform programme design.
- The participation of women in construction craft programmes is low.

### 3. Background and context

#### Introduction

The construction industry is a major contributor to the Scottish economy. In 2009, just over 230,000 people were employed in the industry with an estimated output on £8.2bn, at 2005 prices. A feature of the industry is the small number of large firms and large number of small firms. In Scotland, 90% of firms employ less than ten employees.<sup>2</sup> There is a strong commitment to training in the industry and the recognised Modern Apprenticeship is to SVQ Level 3 (SCQF level 6).<sup>3</sup> Apprentices attend college on a part-time basis in their first and second years and some return in their third year to undertake more advanced studies. The industry accounts for a significant proportion of Modern Apprenticeship registrations in Scotland with some 8,000 apprentices<sup>4</sup> in training each year.

#### Key organisations in construction craft training in Scotland

There are two principal Sector Skills Councils in the industry. *ConstructionSkills* covers all the craft areas with the exception of plumbing. It is also an Industry Training Board with powers to collect levy from the industry each year and return this to employers in training grants. *SUMMIT Skills* is the Sector Skills Council for the building services engineering sector and this includes plumbing. The Scottish Building Federation is the principal employers' federation for the construction industry in Scotland. SBATC regulates the working conditions, wages, recruitment and training of apprentices within the industry in Scotland. The Council is composed of equal numbers of employers and operatives' representatives. The Scottish and Northern Ireland Joint Industry Board (SNIJIB) performs this role for plumbing. It comprises representatives from SNIPEF and the operatives.

In 2009, the Scottish Decorators Federation established the SPADAC to regulate the working conditions, wages, recruitment, training and apprenticeship qualifications in the painting and decorating industry in Scotland. *ConstructionSkills* is the principal managing agent for building craft apprenticeships in Scotland while SNIPEF Training Services manages the plumbing apprenticeship scheme. NSCC represents the growing number of specialist trade organisations within the construction industry and is the authoritative voice of specialist contractors in the UK. These include specialist contractors in areas such as floor laying, partitioning, roof sheeting and cladding and steel fixing.

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<sup>2</sup> Industry data from Sector Skills Assessment for the Construction Sector 2010, ConstructionSkills Scotland Report.

[www.alliancescotland.org/nmsruntime/saveasdialog.aspx?IID=942&sID](http://www.alliancescotland.org/nmsruntime/saveasdialog.aspx?IID=942&sID)

<sup>3</sup> Appendix 4 (pages 32 and 33) provides details of the craft qualifications and Modern Apprenticeships in construction

<sup>4</sup> Page 35 Table 3 provides SDS data on Construction Modern Apprentices

## Economic activity levels in construction industry in Scotland

The industry is experiencing the worst contraction in construction output for over 30 years. The industry in Scotland experienced a reduction in construction output of some 13% between 2008 and 2009.<sup>5</sup> The impact of this downturn has been significant as highlighted by Scottish Building Federation:

*The economic downturn has had a major impact on the skills and capacity within the industry, with thousands of jobs lost and hundreds of construction apprentices laid off. Some 900 construction apprentices have been laid off and apprentice new starts are down by two thirds in 2009.*<sup>6</sup>

The economic downturn impacts on the numbers of apprentices in training and registration numbers follow levels of activity in the industry.<sup>7</sup> It has also impacted significantly on construction departments in Scotland's colleges. Across the colleges included in the aspect report, apprentice numbers have reduced by some 50% and this has put considerable pressure on construction departments. Construction craft programmes are very space and resource intensive and there are competing demands for college resources from curriculum areas that are experiencing growth in learner numbers. In parallel with this, colleges are responding to a reduction in public sector budgets. Demand for pre-vocational programmes including Skills for Work has remained high during session 2010-11, but several colleges are planning a reduction in their school-college partnership provision in 2011-12 because of budget constraints. Almost all of the colleges included in the aspect report are in the process of reducing their staffing levels in construction crafts.

## Traditional building skills

In 2011, *Historic Scotland* published *Traditional Building Skills, a strategy for sustaining and developing traditional building skills in Scotland*.<sup>8</sup> At the same time, *Historic Scotland* published *The Scottish Traditional Building Skills Audit* undertaken by *Historic Scotland*, *ConstructionSkills* and SQA and completed in the summer of 2010.<sup>9</sup> The audit found a large variation in the extent to which current qualifications address the needs of traditional building skills. For example, carpentry and joinery and glazing qualifications cover over 80% of the required skills, while bricklaying and plastering qualifications cover only 60% of the required skills. The audit also identified that, while trade areas such as thatching are covered well by existing qualifications, no college in Scotland is currently delivering qualifications such as thatching.

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<sup>5</sup> Sector Skills Assessment for the Construction Sector 2010 op. cit.

<sup>6</sup> [http://www.scottish-building.co.uk/pages/index\\_top.asp?SessionID=E0AAA8ACDB6D4EAF80672254A6809CE0&pi=1257](http://www.scottish-building.co.uk/pages/index_top.asp?SessionID=E0AAA8ACDB6D4EAF80672254A6809CE0&pi=1257)

<sup>7</sup> Appendix 4, page 32 provides details of apprenticeship registrations in Scotland

<sup>8</sup> [www.historic-scotland.gov.uk/traditionalbuildingskills.pdf](http://www.historic-scotland.gov.uk/traditionalbuildingskills.pdf)

<sup>9</sup> [www.historic-scotland.gov.uk/skillstrategy.pdf](http://www.historic-scotland.gov.uk/skillstrategy.pdf)



## Equality and diversity in construction

*Getting in, Getting on in Construction* is a three-year project to address equality and diversity issues with construction learners in Scotland. It is supported by *ConstructionSkills*, the Scottish Resource Centre for Women in Science, Engineering and Technology at Edinburgh Napier University, the European Social Fund and the Scottish Funding Council (SFC). The project comprised research on attitudes towards women entering the construction industry in Scotland and equality and diversity training for learners in colleges and universities. The report on the main research was published in 2008 and the report on the Modern Apprentice survey in eight colleges was published in March 2011.

*Whilst the modern apprenticeship in construction appeals geographically to all communities in Scotland, the take-up is strongly gendered with low representation of female students. In 2008-09, women made up less than 1.5% of the 4689 construction apprentices in Scotland, and this pattern is also reflected in the take-up among disabled students and students from non-white/other ethnic groups. The available data demonstrates that modern apprenticeship in construction appeals primarily to white able-bodied male candidates. This pattern is replicated at industry level, where women represent less than 10% employees and remain concentrated predominately in administration.<sup>10</sup>*

The report identifies the reasons for this under-representation as being multiple and complex. These are considered to include gender stereotyping in the construction sector, peer or family influence, lack of positive role models, perceived and actual barriers to access for disabled learners or learners from non-white and minority ethnic backgrounds. The report identifies a number of actions to address in particular the gender imbalance in the industry at craft level.

## Scotland's low carbon and resource efficient economy

The *Climate Change (Scotland) Act 2009* creates the statutory framework for the reduction of greenhouse gas emissions. The Act sets an interim 42% reduction target for 2020 and an 80% reduction target for 2050. Section 44 of the Act places climate change duties on Scottish public bodies, including colleges, and these came into force on 1 January 2011. Colleges have an important role to play in developing learners' key knowledge, skills and attitudes so that they can be effective contributors in a low carbon and resource efficient economy. The green economy also has key challenges for industry. As well as reducing greenhouse gas emissions, there are new areas of work in construction including the installation of renewable technologies and improving the energy efficiency of buildings with new standards of insulation and energy consumption. *ConstructionSkills* launched its *Cut the Carbon* campaign for small and medium enterprises in 2010. *SUMMIT Skills* worked with SQA and industry partners to develop a new competence based qualification known as The Certificate in Environmental Technology Systems (Micro-generation). It also worked with its main trade association partners and the

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<sup>10</sup> Getting in, Getting on...in Construction, Modern Apprentices in Scotland, Scottish Resource Centre for Women in Science, Engineering and Technology, Edinburgh Napier University, March 2011.

<http://www.napier.ac.uk/businessactivities/servicesforbusiness/src/Documents/Construction%20Skills%20Modern%20Apprentices.pdf>

Scottish Government's Building Standards Division to support the development of a Scottish Certification Scheme now operated by the Construction Licensing Executive to accredit installers undertaking the installation of micro-generation technology systems. *SUMMIT Skills* has a comprehensive strategy for environmental technologies in the building services engineering sector 2010-13.<sup>11</sup>

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<sup>11</sup><http://www.summitskills.org.uk/public/cms/File/Renewables/SummitSkills%20environmental%20strategy.pdf>

## **4. Programmes in construction crafts**

### **Introduction**

Construction craft programmes are offered by 30 of Scotland's 41 colleges. The extent of provision varies from a single craft (carpentry and joinery) in a few colleges to as many as seven crafts in other colleges. SNIPEF Training Services supports plumbing programmes in 19 of these colleges. The colleges also provide Skills for Work programmes, a range of introductory programmes and upskilling programmes for industry.

### **Partnership working**

Colleges work in close partnership with *ConstructionSkills*, SNIPEF, local councils and other organisations such as Historic Scotland to provide a comprehensive range of Modern Apprenticeships in construction craft occupations. The programmes are agreed with industry, based on occupational standards set by industry, and therefore meet the needs of industry well. However, some of the national organisations consider that several aspects of the main craft schemes need to be updated to reflect modern methods of construction, the low carbon agenda and energy efficient construction. The current review of the construction Modern Apprenticeship qualifications provides opportunity for issues such as these to be considered and addressed. Colleges have established good partnerships with local council education departments and secondary schools to support the delivery of Skills for Work programmes. The programmes provide vocationally relevant studies to enhance the curriculum of young people from local schools.

### **Range of programmes**

Programmes provide a clear and coherent progression path from Skills for Work, through pre-vocational programmes to craft and advanced craft. *ConstructionSkills* investigated the extent to which the introductory construction programmes were successful in informing young peoples' career choice in construction and providing suitably qualified and motivated entrants for the building craft schemes. They analysed a sample of 882 construction apprentices in Scotland to ascertain what proportion had progressed to craft studies from the introductory programmes. Some 28% of the sample had come through this route, 15% from Skills for Work and 13% from the NPA in Construction. This provides the industry with reassurance that the introductory studies are making a significant contribution to the supply of a qualified workforce in the industry.

Introductory programmes incorporate the National Progression Award (NPA) in Construction (SCQF level 5) and include additional units to enable learners to progress further with the craft of their choice. General units such as core skills, employability skills and citizenship skills broaden learners' experiences. Demand for the programmes remains high although with the downturn in the industry opportunities for progression into employment are much fewer than previously. The current downturn in the industry usually makes it very difficult for colleges to arrange work experience placements for learners. However, more than a few of the colleges

have developed innovative approaches for addressing these issues.<sup>12</sup> In most colleges, the design of the introductory programmes does not take sufficient account of the reduced opportunities for employment as an apprentice in the industry. There is insufficient focus on developing a broader range of learner skill sets in areas such as employability, citizenship, leadership, and health and safety. In more than a few colleges, learners on pre-vocational programmes do not receive certification for the core skills of *numeracy*, *communication* and *information technology*.

In construction, the Skills for Work programmes help achieve the purposes of Curriculum for Excellence by providing learning experiences that are practical in nature and develop employability and specific vocational skills. The young people enjoy their learning experiences. They benefit from learning in realistic working environments. The experiences help them understand the expectations and behaviour expected in the workplace, including taking instructions, being adaptable and positive in relation to their work and fulfilling health and safety obligations. The young people develop their core skills including *numeracy*, *working with others* and *communication*. They are encouraged by teaching staff to evaluate their own performance in practical tasks in the same way that apprentices do. This helps the young people reflect on their learning and take responsibility for their actions.

All colleges maintain good links with industry. Many have active advisory boards that provide an important way of aligning provision to meet employer needs. Close links with local construction industry forums often provide an important way for college construction departments to maintain formal links with industry. Such links are important for construction departments. They provide opportunities for colleges to share with industry the benefits of Modern Apprenticeship training. The links enable industry to shape and inform the development of construction programmes in colleges and advise on present and future priorities.

The industry representatives provided positive feedback on the services offered by colleges. They viewed the colleges as being responsive to their needs, suitably resourced and providing good learning experiences for their employees. Most were satisfied with the regular reports they received on the progress the apprentices were making. The adverse trading conditions they were experiencing meant that they usually had far fewer apprentices than previously attending the colleges. Several of the national organisations considered that colleges need to be more proactive in identifying services they can provide for industry. This is often an issue for specialist contactors where they consider that the way colleges are funded discourages them from providing services for small groups. They also consider that there are insufficient opportunities across Scotland's colleges for their members to benefit from the services that colleges provide. The national organisations cited the findings of the *Scottish Traditional Building Skills Audit* carried out by *Historic Scotland* to provide opportunities for colleges to identify new services they could provide for the industry. This was considered to be particularly important in the current economic situation where apprenticeship numbers are very low and threaten the viability of some construction departments. In a few colleges, inspectors identified good examples of construction departments being proactive in identifying new services for

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<sup>12</sup> Pages 26 and 27 provide examples of innovative approaches at Forth Valley, Dumfries and John Wheatley Colleges

industry.<sup>13</sup> One college is developing, in partnership with employers, SBATC and *ConstructionSkills*, a revised apprenticeship delivery model in response to the challenging trading conditions for contactors in its catchment area.

Construction departments have responded well to the downturn in construction activity by providing greater flexibility in the delivery of programmes to meet employer needs. Staff design programmes with flexible entry and exit points to help learners move and progress between programmes, including between college-based and work-based provision. They offer infill places and integrated delivery to retain viability of specialist programmes where the numbers of apprentices are small. Colleges have worked effectively with *ConstructionSkills* and SNIPEF to support the many apprentices who have lost their job during the current downturn in the industry.

### **Equality, diversity and inclusion**

Colleges promote equalities effectively through their programmes. Staff use equalities audit tools to ensure that learning and teaching materials are suitably inclusive. In some colleges, staff analyse performance indicator data at department level by gender, race and disability and take action to address issues raised. The majority of colleges provide craft-based learning experiences for people with mental health issues, physical disabilities and sensory impairments. These experiences build confidence and improve life chances. Most colleges have been successful in recruiting female learners to their introductory programmes and there are a few female apprentices. More than a few colleges have provided specific programmes for female learners. However, the numbers of female learners in construction craft programmes in colleges remain very low.

In many of the colleges there are good examples of particular initiatives taken to address equality, diversity and inclusion issues. At one college, staff interact very effectively with learners and break down barriers and encourage tolerance regarding issues such as gang structures, territorialism and religion to establish a very positive team ethos. Another college hosts an annual *Embracing Diversity Competition Awards* event. A group of learners from one of the college's decorative floor laying classes won an award for their practical safety floor project that used as its theme *Say No to Racism*. One college arranges an annual skills swap day between learners from hairdressing and beauty therapy and construction. The day helps learners appreciate the skill challenges in industries where there are contrasting issues of gender under-representation. It allows learners to appreciate more fully the underlying issues and challenge gender stereotyping.

The Modern Apprenticeship survey, which formed part of *Getting in, Getting on in Construction*, identifies several action points which are relevant for colleges. Colleges are well placed to implement these action points to address the under-representation of women in construction, and equalities and diversity issues more generally. For example, there are opportunities for construction departments to build on their good links with schools and education authorities and their involvement in parents' evenings to continue to promote construction as a positive career choice.

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<sup>13</sup> Pages 27 and 28 provide examples of proactive approaches by Angus, South Lanarkshire and Inverness Colleges

## Response to Scotland's low carbon and resource efficient economy

The extent to which sustainability is a key element in the construction departments' provision varies across the colleges. Sustainability is embedded within the new SVQ plumbing and in the new suite of PDAs at SCQF level 7 which replace the former advanced craft certificates. Reduction of waste and recycling is an integral part of all construction craft programmes. Some colleges have devised strategies to embed sustainability issues in the introductory programmes.<sup>14</sup> A few colleges have established reputations as innovative providers of education and training in sustainability.<sup>15</sup> While in most colleges there are some early developments in sustainability generally and renewable technologies in particular, there is insufficient focus on learners' sustainability skills and energy efficient construction. There are opportunities for most colleges to focus more on key knowledge, skills and attitudes in sustainable development education. This is of particular relevance to school-college partnerships as sustainable development education is now embedded within the experiences and outcomes of Curriculum for Excellence. There is significant new work for colleges in meeting industry needs for upskilling in renewable technologies. This includes installation of renewables and also retro fitting to improve the environmental performance of existing building stock and energy efficient construction more generally. Cooperative approaches may be necessary to avoid duplication of resources and a coordinated service for industry such as *Energy Training East* an alliance of universities and colleges in Tayside.<sup>16</sup>

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<sup>14</sup> Page 27 describes the approach used by Clydebank College to improve learners' awareness of sustainability

<sup>15</sup> Page 28 provides examples of innovative approaches to sustainability by South Lanarkshire and Inverness Colleges

<sup>16</sup> Energy Training East an alliance of universities and colleges in Tayside  
[http://www.dundeerenewables.com/docs/EnergyTrainEastOct10\\_s\\_pages.pdf](http://www.dundeerenewables.com/docs/EnergyTrainEastOct10_s_pages.pdf)

## 5. Learning and teaching

### Learning process

Almost all learners are well motivated and engage fully in learning activities. They know what is expected of them and apply themselves positively to tasks. They respond well to questions on previous lessons and work independently and responsibly on tasks. In almost all the craft programmes, learning activities are predominantly practical in nature and carried out in workshops and project areas. Learners respond very well to these practical activities. They enjoy the practical activities and set about these purposefully and professionally. Apprentices appreciate the breadth and range of work undertaken at college and see this as complementing the work they do with their employer on site. Learners on introductory programmes including Skills for Work gain from the work-related ethos that pervades the Modern Apprenticeship programmes in college. This helps to establish a good working environment in the workshops and training area as less experienced learners observe the working practices of the apprentices and the standards of work they produce.

Most learners are confident in their use of tools, materials and equipment and undertake a good range of practical learning activities. Most learners make good use of ICT-based resources to enhance their learning and work independently. They investigate topics, use computer simulation to practise skill development, and use the virtual learning environment (VLE) independently to catch up on missed classes. Directed self-study sessions help learners develop independent learning skills. Learn Direct and Build (LDB)<sup>17</sup> provides accessible and attractive resources for learners. Across the colleges, there are examples of the LDB e-learning packages being used well by learners to help them with their studies. For example, at one college a teacher in plastering has developed LDB materials which simulate practical plastering tasks. He found that time taken initially in the classroom or learning centre using the packages helped learners to familiarise themselves with processes before engaging in the actual practical task. When learners commenced the activities in the workshop they were more familiar with the processes and techniques and they carried out the workshop-based tasks more effectively and in less time.

In all the colleges visited, learners make good progress in their programmes. Apprentices gain from *catch-up* opportunities that colleges provide to compensate for periods of missed attendance due to pressure of work on site. Learners reflect well and systematically on their learning and the progress they make through their portfolios and individual learning plans (ILPs). Learners at all levels self-assess their work against the specification for the task. This helps them take responsibility for their learning, work independently and this increases their confidence.

### Teaching process

Most teaching staff are enthusiastic, experienced and apply their professional and subject knowledge well to enrich their teaching. All have appropriate craft qualifications and many have improved their qualifications to HNC level, and a few to degree or professional level. They have appropriate teaching qualifications or are

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<sup>17</sup> <http://www.learnirectandbuild.com/about.htm>

working towards these. Staff have extensive relevant industrial experience, though often this is not recent. They maintain good links with industry through regular contact with employers and industry representatives. Staff support learners well and provide good support to them in workshop-based practical tasks, including good one-to-one feedback on progress. In almost all lessons, teaching staff promote industry standards in practical tasks and give strong emphasis to health and safety.

In a more than a few lessons, staff use ICT effectively to enrich their teaching. There are very good examples of the use of interactive whiteboards and plasma screens in workshop-based classes by learners and staff.<sup>18</sup> However, there is opportunity for more development in staff use of ICT to enhance learning and teaching across the colleges. ICT provides opportunities to add variety to the range of teaching approaches, promote independent learning and increase challenge for learners. With the exception of *information technology*, core skills are embedded across the construction craft programmes. Apprentices undertake an information technology unit as part of their Modern Apprenticeship. The embedded core skills are assessed through the Training and Assessment Programmes (TAPs) that are available for all the building craft schemes. Teaching staff are successful in supporting and encouraging learners to gain the required levels of competence across the range of core skills.

*ConstructionSkills* and SNIPeF have the lead role in recruiting learners for the apprenticeship programmes. Colleges have good systems for screening learners on entry to programmes to assess their core skill needs and in planning the necessary support for learning required. Teaching staff include well chosen learning activities designed to develop learners' core skills. For example, at one college the bricklaying teaching staff encourage learners to prepare comprehensive word-processed method statements and reflective logs of their practical work. This is an effective way of developing learners' *communication, information technology and problem solving* skills while consolidating craft processes and techniques. Learners with poor numeracy skills benefit from the applied contexts in which their skills are developed. These include estimating lengths, areas and volumes, calculating quantities of materials required and pricing work, all of which are related to their practical activities. This helps motivate learners as they see the relevance of the tasks in relation to future work activities.

Most teaching staff use effective questioning techniques to check learners' understanding of work. They promote the achievement of standards and there are good examples where staff encourage learner success in skill competitions. Examples of former learners achieving success in national skill competitions are often highlighted in construction departments and this helps establish an ethos where high standards in craft work are valued and can be achieved through hard work and commitment. In workshop-based lessons, staff respond well to the challenges of bi-level teaching and composite classes. In a majority of lessons, teaching staff provide good consolidation of learning and preparation for the next stage at the end of lessons.

In a few lessons, the questioning techniques used by staff are not fully effective in confirming learners' understanding of the work and at times they overlook opportunities to bring learners together to emphasise key learning points. In some

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<sup>18</sup> Page 29 provides an example which explains how staff at John Wheatley College use ICT to enhance learning



classroom-based lessons, there is insufficient variety of learning activities, with the teacher doing most of the work and learners being observers rather than active participants and not sufficiently engaged in learning for much of the time. One college uses cooperative learning approaches effectively to engage learners in learning and to provide variety and challenge.<sup>19</sup> In some colleges, live project work is used very successfully to provide relevance to learning activities and to help non-industry-based learners to experience work beyond the classroom and workshop.<sup>20</sup> By engaging in live projects and producing permanent work, learners are able to apply the skills they have been taught in college. A record of their participation in the projects provides useful evidence for learners to include in their portfolios which they can share with prospective employers.

### **Planning for learning and teaching**

In almost all lessons, staff relationships with learners are very positive and respectful. Most staff plan lessons systematically and effectively. They set clear objectives and agree these with learners. Staff support the development of learners' core skills in lessons. They ensure that learning activities are suitably paced and sufficiently challenging for learners. Progress charts in workshops provide clear evidence of the progress learners make. Staff show creativity in devising flexible ways of working to meet the needs of local industry and maintain continuity of provision. However, in a few classroom-based lessons, where both first and second year learners are taught in the same class, there are difficulties maintaining the pace and continuity of the learning experience. In most classes, teaching staff take opportunities to emphasise the importance of recycling materials to minimise waste. They emphasise the importance of good working practices and attention to health and safety, and there are good examples of learner-led risk assessment. However, in more than a few lessons, there is insufficient embedding of sustainability beyond minimising waste, recycling, and disposal of waste.

### **Resources**

There has been substantial upgrading and renewal of teaching accommodation for construction craft training in Scotland's colleges in the last two to three years. Of the eight colleges visited for the aspect report, four colleges had new estates and the construction departments had purpose-built modern accommodation with new tooling and equipment and ICT access in all teaching areas. One college was in the middle of a major capital project with new construction teaching accommodation for one of its campuses scheduled for opening in August 2011. Two further colleges were at the early stages of major capital projects. The colleges provide up-to-date, well-resourced training facilities for industry. However, there is concern in the industry whether these facilities will be retained by all colleges in view of the falling number of industry-based learners.

The impact on learners of the new construction teaching accommodation is considerable. In two of the colleges, prior to the commissioning of the new buildings, construction teaching was carried out in centres away from the general college facilities. This made it difficult for the colleges to provide access for

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<sup>19</sup> Page 29 provides an example of cooperative learning approaches at Angus College

<sup>20</sup> Pages 30 and 31 provides examples of the use of live project work by City of Glasgow and Angus Colleges

construction learners to the full range of college services that other learners experienced. In the two new college buildings, construction workshops are located adjacent to the central hub in the colleges. Learners respond well to being taught in bright, airy and well equipped workshops that have been designed effectively by staff to ensure there is sufficient space for storing materials and work-in-progress without obstructing work areas. They are respectful in their use of the new teaching accommodation and equipment.

Overall, the college estates have been transformed since the last HMIE review of construction provision in Scotland's colleges published in November 2000.<sup>21</sup> There are sufficient tools, equipment and materials of appropriate quality to support learning. Several construction departments receive substantial donations of equipment and materials from industry and this helps ensure learners have access to the latest developments in technology. A few colleges have established new facilities for training in renewable technologies. One college works with a number of manufacturers of renewable technologies who provide and update the workshops with their latest products. Manufacturers share the facilities with the college and undertake their own training of installers in the premises and the college are able to use the same facilities for their learners. This enhances the experience of learners attending the college as they are exposed to the latest developments in industry. In a few colleges, weaknesses in the provision of resources include some untidy teaching areas, a dust and noise nuisance, inadequate ventilation and no natural lighting.

### **Guidance and support**

All college prospectuses and web sites provide clear information on the content of construction craft programmes. This information is complemented by the web sites of *ConstructionSkills*, SNIPEF, SPADAC and SBATC, which provide information for learners on apprenticeships in the industry and career paths. Recruitment and selection for the industry-based craft programmes is carried out by *ConstructionSkills* and SNIPEF and involves selection testing. Colleges apply their own arrangements to assess learners' skills on entry and to plan any necessary support to meet learner needs. Colleges invite prospective full-time learners to interview and most use some form of assessment to ensure learners are placed on programmes suitable to their needs. Recruitment and selection for school-college partnership programmes are usually the responsibility of schools and education authorities, but college staff are increasingly involved in this process, including providing information before entry to inform the young person's choice. Some colleges have very close links with partner schools and staff are fully involved in recruitment, ongoing guidance and support for young people.

All learners receive a well-planned and comprehensive induction to their programmes, which includes comprehensive health and safety training. Arrangements for ongoing guidance are effective and ongoing monitoring of progress by industry representatives complements these processes very well. Construction staff know their learners well. They understand the industry in which learners are either employed or are seeking employment. Staff support learners well in the development of core skills throughout programmes. All colleges use ILPs or personal learning plans to agree learning targets with learners and to review

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<sup>21</sup> Standards and Quality in Colleges of Further Education 1995-1999: Construction, HM Inspectors, November 2000

progress regularly. Guidance and support staff provide valuable additional support to learners where needed and this includes help with literacy and numeracy skills and preparation for employment interviews. Construction staff use their links with industry well to help full-time learners progress to employment in the industry.

## **Assessment**

There are systematic and effective arrangements for assessment across construction programmes. Assessment as part of teaching is carried out very well. There are clearly defined tasks with criteria for success known to learners. In most lessons, teaching staff use effective questioning techniques to check learners' understanding of work. Staff provide clear feedback to learners on their work and this helps learners improve their skills. The availability of nationally-devised TAPs has improved significantly the assessment arrangements that were in place previously.<sup>22</sup> The readily available assessments and alternative assessment instruments provide valuable support for staff in colleges. Practical assessment tasks include clear dimensional tolerances for work pieces and learners taking responsibility for their work and self-assessing against the standards required. This is an effective way of developing the skills that learners need in industry. The TAPs encourage learners to comment on their work and the feedback they have been given. This is an effective way of developing learners' communication skills, encouraging self-reflection and providing evaluative records for staff on assessment instruments in use.

Almost all the colleges visited use e-portfolios for SVQ programmes in construction. Using e-portfolio, staff can complete reviews of progress directly on the computer and add photo galleries to each portfolio. Several colleges use portable tablet computers which help teaching staff refer readily to previous work during reviews with learners. Learners can add notes and comments directly to the portfolio and handwritten comments are readily converted to typewritten form using special software. There are useful developments in e-assessment across the colleges. The new plumbing schemes introduced in 2010 use SQA's e-SCHOLAR for the assessments. While there are a few teething problems with the introduction of the new arrangements, staff find the process very helpful and learners value the very quick feedback on summative assessments. The e-SCHOLAR assessments are being rolled out for the other craft schemes. Across the colleges, internal moderation of assessment is effective. Reports from SQA external verifiers are very positive about assessment arrangements.

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<sup>22</sup> Standards and Quality in Colleges of Further Education 1995-1999: Construction, HM Inspectors, November 2000

## 6. Outcomes and impact

### Retention and attainment

SFC data on retention and attainment at programme level provides useful information on which to examine trends across the sector as a whole, within individual colleges and across individual subject areas. As with all statistical data, caution needs to be applied when interpreting the figures because of changes in the way statistics are gathered and processed in different years. However, they do provide useful insights in a number of areas. Inspectors analysed the SFC data for individual colleges and focused on three categories of programmes. These were: industry-based programmes at both FE and HE levels; full-time introductory programmes including pre-apprenticeship programmes; and part-time Skills for Work programmes.

In all colleges, early retention rates are high in the current session 2010-11 and consistent with previous sessions. The completion rate, usually referred to as student retention, is the percentage of funded learners who complete the whole programme. The success rate, usually referred to as student outcome, is the percentage of learners who complete the programme that are successful in gaining the required criteria for success. In all colleges, retention and attainment rates are high across the industry-based craft programmes. However, colleges have experienced a drop in retention rates in these programmes because apprentices have lost their job because of the downturn in the industry. The interventions made by industry and the colleges that have allowed displaced apprentices to continue in their programme has reduced the overall impact of this.<sup>23</sup>

In almost all colleges, attainment rates for full-time pre-vocational and introductory programmes are good with most learners who complete the programme achieving success. However, retention rates are low in more than a few of the full-time introductory programmes across the colleges. Learners leaving these programmes before the completion date can have a positive outcome. They may have secured employment in the industry and often return to college on part-time industry based programmes. In all colleges, retention rates for most Skills for Work programmes are high. However, across the colleges, attainment rates in more than a few Skills for Work programmes are low with several learners not achieving the required criteria for success. This is usually because learners have one small element in the coursework incomplete and have not returned to the college following their Standard Grade examinations to complete the work. Most colleges are addressing this issue with their partner schools and are adjusting the phasing of college attendance to improve attainment rates.

In all colleges, retention and attainment rates are high for industry-based craft programmes. However, to achieve the SVQ Level 3 in a specific craft occupation candidates require to complete successfully a *skills test* in the fourth year of their apprenticeship. The *skills test* is an industry requirement. However, there is no separate *skills test* in the plumbing Modern Apprenticeship.<sup>24</sup> Skills Development

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<sup>23</sup> Pages 29 and 30 provide an example which describes how South Lanarkshire College supports learners into employment

<sup>24</sup> Page 33 provides details of the Modern Apprenticeships

Scotland publish success rates in Modern Apprenticeships.<sup>25</sup> The data relates to apprentices in both colleges and private training centres. Skills Development Scotland calculate the success rates by the number of leavers who have achieved a qualification as a percentage of the total number of leavers, including achievers and non-achievers, in any financial year. The data shows that the construction apprenticeships account for approximately one third of those in training. The achievement rates for the construction craft schemes in 2009-10 (65%) are below the average for all schemes (70%) although the achievement rates for the plumbing apprenticeships are higher (74%). While these are not like-for-like comparisons, these figures indicate a potential issue for the industry in terms of their strategy to achieve a fully qualified workforce. *ConstructionSkills* analyse success rates in skills testing.<sup>26</sup> The data shows significant variation in success rates across the different crafts. While overall success levels are relatively high, these indicate that some 200 to 300 construction apprentices in their final year are not successfully completing the test at the first attempt and their Modern Apprenticeship SVQ.

*ConstructionSkills* are working with both SBATC and SPADAC to identify how they can increase success rates while ensuring that the standard of this assessment is maintained. Following recent reviews of the content of the various *skills tests*, the industry and centres are supportive of the content. *ConstructionSkills* are not proposing to review the content of *skills test* but to focus on how apprentices can be prepared for this assessment and in the longer term reviewing the model of its delivery. They are committed to ensuring that *skill testing* plays an important part of the Modern Apprenticeships. While construction apprentices attend colleges in their first and second years, only some will return in their third year to undertake advanced craft studies. The apprenticeship scheme does not require apprentices to attend college during their fourth and final year. Apprentices are based with their employer for this time, although a few may attend college for short durations to complete any assessments they may have missed. How well apprentices are prepared for the *skills test* will often be determined by the type of experience they are receiving on site during the latter stages of their apprenticeship. Generally, colleges are not presently involved to any significant extent in preparing apprentices for the *skills test*.

## **Wider achievement**

Learners undertaking construction craft programmes develop a wide range of skills. The development of learners' employability skills is a key part of their experience. Learners gain employability skills during their practical craft work which they undertake in realistic working environments in colleges. They learn to work flexibly and cooperatively with other learners, to manage their time effectively and to plan, organise and evaluate their work. Most full-time learners do not have the benefit of the integrated training scheme that apprentices experience with periods of employment on site. However, colleges compensate for this by arranging community-based projects that extend their skills and also promote awareness of citizenship issues. The Royal Marines Woodland Garden Trust project<sup>27</sup> provides an excellent example of practical community-based projects. Examples such as this provide opportunities for learners to develop vocational, employability, citizenship,

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<sup>25</sup> Page 35, Table 3 provides achievement data for Modern Apprentices

<sup>26</sup> Page 35, Table 4 provides success rates in *skills testing* over the period 2008-10

<sup>27</sup> Pages 30 and 31 provide details of Angus College's work with the Royal Marines Woodland Garden Trust

and volunteering skills. There are also examples of cross-curricular projects in colleges such as prop production for drama learners.

Across the colleges, the standards of practical and written work are consistently good. Many learners achieve high standards in practical craft projects. Learners participate in skill competitions and some colleges are successful in achieving high levels of success. *SkillBuild* is managed by *ConstructionSkills* and is the premier skills competition for construction apprentices in the UK. A national competition takes place each year and is preceded by a series of regional heats in which most colleges participate. Well over 1,000 competitors participate in these competitions each year. The test pieces for the competition are designed to challenge participants to produce high standards of practical craft work within strict timescales. Construction teachers' associations such as the Scottish Association of Timber Trades Teachers (SATTT) and the Scottish Association of Painting Craft Teachers (SAPCT) also run skill competitions. Two construction apprentices from Scotland were members of the *WorldSkills 2011 Squad UK* and one, a female painting and decorating apprentice, is a member of the UK team. Staff use competition success in their improvement strategies to motivate learners to achieve the best they can. Participation in competitions encourages learners to improve their own skills and provides evidence for employers, who attend the events, of the high quality of craft work being produced in colleges and other training centres. Learners also gain in confidence by participating in skill competitions.

## **Progression**

In most of the colleges, a majority of learners who successfully complete the introductory programmes are successful in gaining employment or continuing on a further college programme. There are some very good examples of progression. In one college, the majority of learners who successfully complete the pre-apprenticeship programme in construction are successful in finding employment. More than a few of the learners on Skills for Work programmes progress to further training and employment in the industry. In most colleges, arrangements for tracking learner destinations from introductory programmes are not systematic enough to inform programme design. Often information available is anecdotal in nature and is not sufficiently robust to inform the review of existing programmes and the design of future programmes. This is a key issue for colleges as opportunities for progression to employment in the construction industry are far fewer than previously because of the impact of the economic downturn on construction jobs.

## 7. Enhancement through self-evaluation and internal review

There are comprehensive and effective arrangements for self-evaluation across colleges. Staff work well together and with learners to review programmes and the quality of learners' experiences. They identify what works well and what needs to be improved. Programme teams agree actions to address the issues identified. Staff are very committed to improving the quality of learners' experiences. Associations of teachers in specific craft areas, such as the timber trades (SATTT) and painting and decorating (SAPCT), hold meetings in their own time to review practice and develop jointly teaching materials. They discuss practice in the colleges and arrange skill competitions. A strength of self-evaluation and internal review processes is the involvement of industry representatives and the willingness of staff to respond to comments made and suggestions for improvement. Staff from both *ConstructionSkills* and SNIPEF visit the colleges regularly and provide comment on the experiences of their trainees both in college and on site and identify any issues to be addressed. On some occasions they may join staff teams to discuss practice. Industry advisory committees, feedback from the local construction industry forums and from ongoing dialogue with employers provides valuable evidence for team review meetings. This is complemented by periodic monitoring of facilities and standards in the colleges by *ConstructionSkills* in visits that include employers. Construction staff also respond well to the regular visits from SQA external verifiers. Across the colleges, staff respond well to evaluative feedback from external bodies.

Most self-evaluation reports provide clear evidence of learners' views of their learning experiences. Colleges have been giving high priority to enhancing their arrangements for learner engagement. In most colleges, there are class representatives who attend programme review meetings with staff and raise issues of concern to learners. Staff respond well to points raised by learners and take action to address issues and improve the experience for learners. However, in a few colleges, staff experience difficulty in ensuring the attendance of industry-based learners in review meetings. In four of the eight colleges visited, arrangements for self-evaluation include the direct observation of learning and teaching. This approach is helpful in spreading good practice in teaching approaches and in providing support for staff where this is necessary.

However, in more than a few colleges, the evaluation of learning and teaching is not sufficiently rigorous in identifying what works well and areas where teaching needs to be improved. Often teaching teams focus their evaluations on issues to do with resources and less on aspects of teaching methods. In all colleges, self-evaluation processes include the systematic analyses of performance indicators in retention and attainment, at programme and usually at unit level. Staff use these analyses to inform their evaluations of learner progress and outcomes and identify actions for improvement. However, in more than a few colleges, self-evaluation reports do not contain analysis of PI data by gender, race and disability at programme level. The availability of data showing the impact of college equality schemes on retention and attainment for each of the equality strands is improving and colleges have well-advanced plans to implement these.

Staff in the construction departments are fully aware of the importance of continuing professional development (CPD). All colleges have well-developed arrangements to ensure that staff benefit from CPD to update their teaching qualifications and

experience. New teaching staff are enrolled on PDAs in teaching practice and then progress to Teaching Qualification (Further Education) (TQFE) programmes. Colleges have effective arrangements for providing staff training in areas such as safeguarding and equalities legislation. They have developed arrangements for subject-specific CPD and updating. Staff usually have an annual appraisal or career review to identify their individual staff CPD needs. Predominantly, CPD is driven by legislative requirements such as gas safety registration, the Construction Safety Certification Scheme (CSCS) and other statutory training including working at heights, Control of Substances Hazardous to Health (COSHH) and risk assessment. Many colleges bring in guest speakers to provide technical lectures on material technology, equipment demonstrations and sharing of industry best practice. Often arrangements in colleges enable learners to attend these sessions with staff. However, most of the national organisations consulted identified the need for staff updating experience in industry to be improved, particularly for the longer-serving staff. In only a few of the colleges is there evidence that CPD activity includes staff placement on construction sites. This is an area where construction departments can use their good links with industry to effect improvement.



## 8. Recommendations

The Scottish Funding Council (SFC) should:

- work with colleges to improve methods of tracking learner destinations from programmes.

Scotland's Colleges should:

- draw on the findings of this report to support colleges in taking forward the recommendations.

Colleges should:

- ensure that the design of full-time pre-vocational and introductory programmes in construction takes account of opportunities for employment in the industry;
- develop knowledge, skills and behaviours in sustainability that learners require to be effective contributors in Scotland's low carbon and resource efficient economy;
- make more effective use of ICT to enhance learning and teaching within lessons, building on current good practice;
- ensure that learning and teaching approaches used in classroom-based lessons are sufficiently challenging for all learners and engage learners fully in their learning;
- take action to address the low representation of women in construction craft programmes, informed where appropriate by the findings of the *ConstructionSkills* sponsored research *Getting in...Getting on in Construction*, published in March 2011;
- devise and implement systematic arrangements for tracking learner destinations from pre-vocational and introductory programmes; and
- contribute as necessary to industry discussions on strategies for increasing candidate achievement rates in the skills test which forms part of the Modern Apprenticeship in the construction crafts.

Education Scotland should:

- continue to monitor progress made with the above recommendations through their annual engagements with colleges, and disseminate information on key improvements as they emerge across the sector.

## Appendices

### Appendix 1

#### Colleges involved in fieldwork for this report

- Angus College
- City of Glasgow College
- Clydebank College
- Dumfries and Galloway College
- Forth Valley College
- Inverness College
- John Wheatley College
- South Lanarkshire College

## Coverage of craft and introductory programmes during the visits to colleges

Craft/College visited	AC	CC	CG	DC	FV	IC	JW	SL
Bricklaying	✓			✓	✓	✓		✓
Carpentry and Joinery	✓	✓		✓	✓	✓	✓	✓
Painting and Decorating	✓	✓		✓	✓	✓		✓
Wood Machining					✓			
Plastering			✓					✓
Roofing Occupations	✓					✓		✓
Shopfitting			✓					
Stonemasonry			✓					
Wall and Floor Tiling			✓					
Glazing								✓
Decorative Floor Laying			✓					
Plumbing		✓		✓	✓	✓		✓
NPA Conservation of Masonry			✓					
Skills for Work Int 1/2	✓	✓	✓	✓	✓	✓	✓	✓
NPA in Construction	✓	✓	✓	✓	✓	✓	✓	✓

**Legend:**

AC	Angus College
CC	Clydebank College
CG	City of Glasgow College
DC	Dumfries and Galloway College
FV	Forth Valley College
IC	Inverness College
JW	John Wheatley College
SL	South Lanarkshire College

### Case studies of practice in the colleges visited

#### **Forth Valley College: partnership working with a contractor**

As part of the college's estates strategy, the department of construction has established an agreement with a national contractor to provide a range of benefits to learners and college staff. Learners participate in an ongoing programme of work experience on the site of the college's new premises in Alloa and there are plans to extend this to the site of the new college campus in Stirling. The agreement also includes a schedule of monthly site visits for college learners, staff and key stakeholders. Staff in the construction department have worked with both the main contractor and specialist sub-contractors to develop a series of subject-specific guest lectures to enhance the learning experience and update staff knowledge of current industrial practice. In partnership with their network of sub-contractors, the main contractor has agreed to employ five construction craft apprentices. Recruitment prioritises where possible the re-employment of redundant apprentices to allow them to complete their apprenticeship programme. The contractor provides work experience for learners undertaking the college's *Get Ready for Work* programme. The work experience enables the learners to develop the practical skills they have been taught in college. It also enables them to develop mature relationships with adults in a working environment. Learners consolidate the employability skills they are taught on their programme such as timekeeping, being responsible for getting to work, communicating with others combined with other essential elements including responsibility for health and safety. The experience helps learners gain positive destinations in the industry on completion of their programme.

#### **Dumfries and Galloway College: partnership working with a housing partnership**

Dumfries and Galloway College has worked in partnership with Dumfries and Galloway Housing Partnership (DGHP) for over four years to provide bespoke training programmes to support DGHP's main construction contractors. In response to the current downturn in construction activity and the availability of apprenticeships, DGHP wanted to provide an opportunity to enhance their tenants' employment prospects by equipping them with the necessary skills to compete in the construction jobs market. The college designed a full-time pre-vocational construction programme to meet this need. Each week, learners attend college for three days and undertake two days work experience with DGHP's maintenance contractor. The college element of the programme provides learners with a taster in six crafts as well as core skills and tutorial support. As part of the agreement, each learner is guaranteed an employment interview on successful completion of the programme. More than a few learners have been successful in gaining employment on completion of these programmes. Participation in the scheme has had a number of benefits for learners. They realise that the skills they are learning in college can be put to good use when out in the workplace on a weekly basis. The reviews have been very positive showing that learners are demonstrating not only practical ability, but also employability skills.

### **John Wheatley College: work experience for pre-vocational learners**

In an innovative development, John Wheatley College delivers the NPA Construction Crafts (SCQF level 5) in partnership with Glasgow Regeneration Agency (GRA). As part of the arrangements, learners undertake a work experience placement with a contractor on the Commonwealth Games athletes' village as part of Glasgow's legacy from the games. GRA also provide support to the learners in preparation and testing for the Construction Safety Card Scheme (CSCS). This card assists learners in gaining a foothold to employment within the construction industry as it is a major requirement for gaining access to site. GRA also provides support and assistance to learners actively seeking employment once the college programme has ended. The placement helps learners develop their skills in a real working environment and improves their employability. It adds purpose and relevance to their studies and improves learner motivation and self-confidence.

### **Angus College: traditional building skills**

The construction section of Angus College has a local reputation for its proactive approaches to meeting industry needs. Staff have identified a growing demand for traditional building skills as a bi-product of the recession in the industry and the downturn in the new-build market. They worked with the *Brechin Townscape Heritage Initiative* to investigate the skills levels of local companies. Staff carried out a survey of more than 200 companies in the Perth and Kinross, Angus and Tayside regions. From this they identified a skills gap and the need for a recognised qualification in traditional skills. The college secured funding for the survey from Angus Council, the Heritage Lottery Fund and LEADER, part of the Scottish Rural Development Programme. To support the development of heritage skills training, the college has identified training of its teaching staff in these skills as an early priority. As a result, *Brechin Townscape Heritage Initiative* have agreed placements for teaching staff with contractors working on the heritage project in Brechin.

### **Clydebank College: improving learners' awareness of sustainability**

Staff in Clydebank College have responded well to the Scottish Government's commitment to improve Scotland's natural and built environment and the sustainable use and enjoyment of it. They have investigated ways of improving learners' awareness of sustainability issues as part of their college programme and sources of funding. Staff identified the British Plumbing Employers Council's two-day renewables awareness certificated course as a suitable element for programmes. They used *ILA 200* funding to cover the cost of the course. All learners on construction pre-apprenticeship programmes, first year apprentices and some second and third year apprentices undertake the course. The course provides a good grounding in sustainability and provides opportunities for staff and learners to reflect on the issues and take account of sustainability throughout their time at college and in employment.

## **South Lanarkshire College: sustainability in the curriculum**

The college's construction faculty continues to develop and enhance its curriculum portfolio to address current and future needs from industry for programmes that address sustainability and renewables within construction. Staff have developed a renewables programme to support industry demands for renewable energy installation programmes. Other industry requirements for training stem from the planned changes to Building Standards in 2013 and 2016 in relation to renewable energy targets for domestic construction and improved insulation values. The college has developed and delivered successfully a range of full-time and part-time renewable energy certificated programmes including: introduction to renewable energy; solar thermal-hot water; biomass heating; ground/air source heat pumps; wind power; micro hydro power; and photo voltaics. The college has upgraded and re-equipped workshops, often in partnership with manufacturers, to enable these programmes to be delivered in state of the art workshops that enable full practical installation to take place. The workshops are supplemented by the college's low energy, low carbon house, which provides a working example of the uses of the various technologies and energy efficient construction techniques to achieve its net zero carbon status. Staff have embedded sustainability within all construction programmes. Energy awareness is now part of the college's pre-apprenticeship programme. Staff embed sustainable approaches within the SVQ craft programmes. Sponsoring companies use the college's facilities for product launch events and to develop and upskill their workforce.

## **Inverness College: Sustainable Energy and Micro-renewables (SEAM) centre**

Inverness College was one of the first colleges in Scotland to provide installer training for renewable energy in the form of a programme for solar hot water systems. In 2008, the college recognised a growing need for expanding this training to cover the installation of as many other domestic scale renewable energy and sustainable construction technologies as possible. A project proposal and business plan was developed and received support from the Scottish Government through the Community And Renewable Energy Scheme (CARES) administered by Community Energy Scotland, and Highlands and Islands Enterprise. The new training facility created by the project became known as the *SEAM Centre*. It features a range of renewable energy technologies including solar hot water, solar photovoltaics, heat pumps, and biomass systems. Further technologies such as wind turbines, rainwater harvesting, underfloor heating and micro combined heat and power are planned. The *SEAM Centre* aims to become a hub of renewable energy training and information. Inverness is a strategically important location for this. Beyond the main urban areas of the Highlands most properties are off the gas network and so heated more expensively by electricity, oil or solid fuel, yet are often suitable locations for renewable energy solutions. As well as providing installer training, the SEAM Centre is active in hosting seminars and workshops to impart renewable energy knowledge to a range of audiences including professionals and homeowners. The college offers practical renewable energy training to construction apprentices and full-time learners. Visits from school groups to the centre ensure that future generations are given an early introduction to the potential benefits of renewable energy and prepares them for an expanding job market in this field.

### **John Wheatley College: use of ICT to enhance learning**

The college's construction team has developed and implemented imaginative approaches to blended learning using a variety of ICT resources within practical lessons. Staff encourage learners to use interactive whiteboards, PC tablets and computers to enhance and broaden their knowledge and understanding, to reinforce key teaching and assessment points, and encourage investigative work. They also use these approaches to promote learner engagement and support peer evaluation. Staff exploit the interactive capability of whiteboards to encourage learners to be more self-directed in their learning during practical sessions. For example, in one lesson observed learners searched for and located crucial data and information needed to complete their practical assignments including sizes, proportions and sequencing of operations that would normally have been presented to them by teaching staff. Staff use interactive whiteboards effectively to engage in activities such as quizzes using popular television formats including *Who wants to be a millionaire?* populated with relevant and current subject matter to consolidate learning and encourage participation in a less formal environment.

### **Angus College: cooperative learning approaches**

The construction team at Angus College is engaged in an action research project as part of Curriculum for Excellence and learning enhancement developments taking place across the college. The team work with staff in social sciences to develop cooperative learning approaches to meet the needs of learners. They have found the cooperative approaches with a focus on learners working in groups on a variety of learning activities has improved learners' understanding of topics, increased their self-confidence and motivation. For example, the use of the cooperative approaches in bricklaying has increased the extent to which apprentices are engaged in planning their learning activities, analysing and sharing construction information they have sourced, and supporting each other in learning activities. Learners prepare and deliver small presentations to the whole class on their findings. They use peer assessment to help each other improve their knowledge and understanding of bricklaying techniques and underpinning craft knowledge. Lessons are evaluated systematically as part of the action research project and feedback from learners is very positive.

### **South Lanarkshire College: supporting learners into employment**

The college gives high priority to developing and delivering programmes which have a high educational value in reflecting industry and employer needs. Its aim is to provide programmes that produce economically viable results in terms of jobs and that are planned to reflect current needs of industry, Scottish Government and learners' needs, taking full account of the current economic climate. Programmes prepare learners well for employment by developing and improving learners' employability, core and citizenship skills. The college's strong links with employers, Sector Skills Councils and industry bodies ensure that learners gain or regain employment and develop current skills. As a result, learners have good levels of success in gaining jobs. For example, the majority of the learners who successfully complete the college's pre-vocational programme in construction crafts are successful in gaining employment in the industry.

Staff have taken account of the current challenging employment situation in construction by redesigning the college's pre-apprenticeship programmes to prepare

learners better to compete in a competitive job market. They have incorporated a number of new elements into these programmes. These include health and safety, CSCS card, employability, citizenship and leadership skills, and energy awareness certification. The college works in collaboration with a large number of employers and organisations in a flexible way to support both employers and learners in managing the current economic climate. As a result, many learners gain or regain employment within the industry. The college uses its good links with industry and its legacy of effective training for the construction industry to provide funding to support apprentices who have lost their job because of the downturn in the industry. Private sponsors have contributed £250,000 over a five-year period to support displaced apprentices. The funding has already helped significant numbers of apprentices to complete training and secure alternative employment.

### **City of Glasgow College: enterprise, industry and community partnership**

The *Bridgeton Burns Club* requested the urban regeneration company *Clyde Gateway* to consider a monument to mark the 250<sup>th</sup> anniversary of Robert Burns. The monument was to be sited at Bridgeton Cross in Glasgow, as part of the public realm regeneration work in Glasgow's East End. *Clyde Gateway* approached the college to develop a design project for learners attending the college's schools of the built environment and the school of design. Following the selection of the winning design, it was proposed that stonemasonry apprentices would carve the stone and work with the main contractor in the erection of the finished monument. Partners in the project included the *Bridgeton Burns Club*, a community stakeholder group, *Clyde Gateway* and the college. A second year apprentice produced the winning design and attended a number of meetings with partners to explain the concept of his design. Second year and advanced craft apprentices in the college carved the stone and worked with the main contractor in the erection of the monument. Scotland's Colleges developed a case study of the project and produced a video featuring the design, cutting and erection of the monument.<sup>28</sup> Learners involved with the project gained from the experience of working to specific tolerances and time constraints, issues affecting the contractors and the site work. The project was completed on time and to acceptable industry standards. Following the completion of the project, the main contractor offered City of Glasgow College learners apprenticeship places in various crafts. In session 2011-12, the contractor will provide five Modern Apprenticeships for the college's learners.

### **Angus College: 45 Commando Royal Marines Woodland Garden Trust**

The *Woodland Garden Trust* project is a practical community-based project that the college is undertaking for the 45 Commando Royal Marines squadron based at RM Condor just outside Arbroath. The project was designed by the Royal Marines Association and 45 Commando as a remembrance and reflection garden for the families, colleagues, and local community for those killed and injured in the recent conflicts in Iraq and Afghanistan. It has been developed on a broad partnership basis, bringing together soldiers from 45 Commando, construction and land-based learners from the college, commercial contractors, community groups, BBC Scotland, and a film documentary crew. The construction learners are responsible for a range of practical design, planning and hard landscaping tasks for the garden, and have used this to support their learning. The project provides learners with

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<http://scotlandscolleges.ac.uk/curriculum/enterprise/robert-burns-memorial.html>



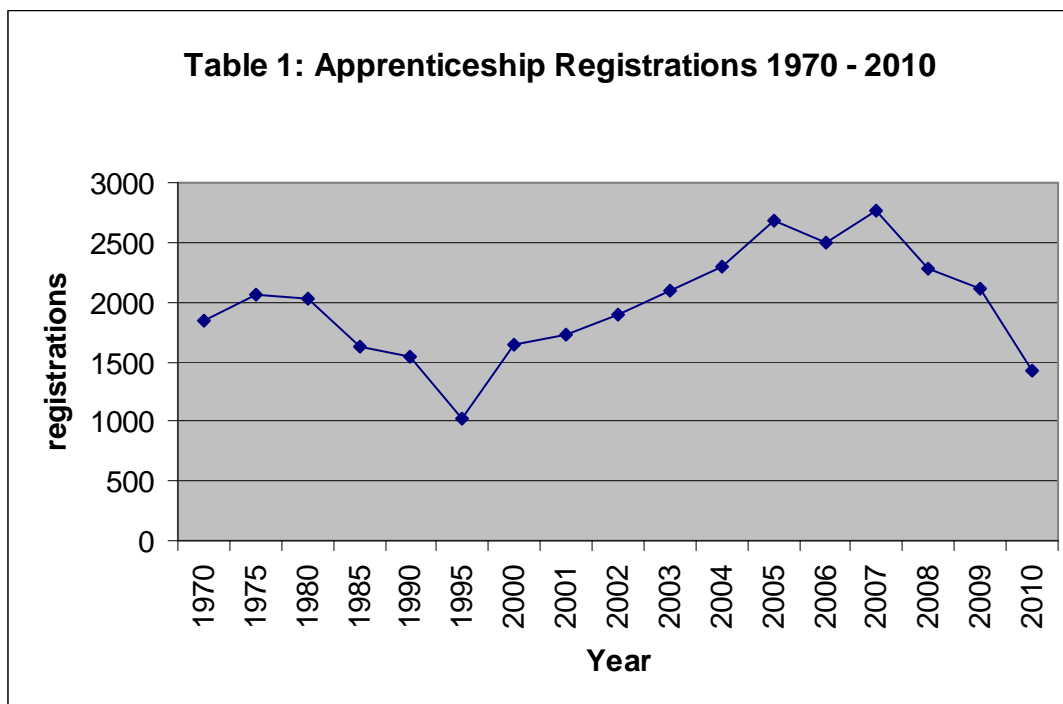
significant opportunities to develop their skills and knowledge through real work activities. Through this project, learners undertake site surveying, design, planning, brickwork and stonework, joinery and traditional heritage skills.

The project as a whole will be the subject of a documentary film which is being produced on an ongoing basis as the work progresses. The multi-disciplinary nature of this project supports the development of learners' employability, community and interpersonal skills. The project brings together learners from different parts of the college along with senior officers, Royal Marines, community groups, visitors and commercial contractors. All of these groups work together to ensure that the project progresses in line with the overall project plan. Many of the Royal Marines supporting the project have sustained significant injuries and disabilities as a result of combat. Working with these marines focuses learners' awareness and understanding of disability, equality and the effects and impacts of warfare. This is challenging for some learners and develops their awareness, understanding and sensitivity of equality and diversity and citizenship issues.

## Apprenticeship registrations and construction craft qualifications

### Construction apprenticeship registrations in Scotland

Table 1 shows the apprenticeship registrations in Scotland over the period 1970 – 2010 provided by SBATC. *ConstructionSkills* have implemented schemes under the Scottish Government's ScotAction initiative, which is a skills support package for leading Scotland out of recession and on to economic growth. These include Adopt an Apprentice and Safeguard an Apprentice to secure a replacement employer for displaced apprentices. *ConstructionSkills'* sector skills assessment for 2010 indicates that 42% of all displaced apprentices have been placed with another employer.<sup>29</sup>



### Construction craft qualifications in Scotland

SQA provides a coherent structure of qualifications in construction crafts from SCQF level 4 to SCQF level 7 with opportunities for progression to more advanced qualifications. The entry level qualifications, Skills for Work (SCQF level 4/5), provide opportunities for young people from schools to sample practical craft skills and to develop skills and attitudes to enhance their employability. The National Progression Award (NPA) in Construction (SCQF level 5) provide an introduction to construction crafts to prepare learners for a career in a construction occupation. Importantly, the units contained within the NPA lead towards the full National Occupational Standards (NOS) identified by *ConstructionSkills*, but standards and tolerances are set below the full NOS. The NPA is usually contained within a full-time pre-vocational or pre-apprenticeship programme in colleges. The NPA

<sup>29</sup> Sector Skills Assessment for the Construction Sector 2010, *ConstructionSkills* Scotland Report.

[www.alliancescotland.org/nmsruntime/saveasdialog.aspx?IID=942&sID](http://www.alliancescotland.org/nmsruntime/saveasdialog.aspx?IID=942&sID)

enables learners who gain a Modern Apprenticeship to progress to the full NOS which form the basis of the Construction SVQs. An equivalent NPA for the building services engineering sector is currently being developed by SQA in partnership with *SUMMIT Skills*. In 2010, SQA introduced a suite of Professional Development Awards (PDAs) at SCQF level 7 to replace the former advanced craft certificates. While these qualifications retain a strong focus on craft and hand skills development, they are designed to prepare candidates for progression to technician, supervisory and management qualifications.

### **Modern Apprenticeships in construction crafts**

The Modern Apprenticeship framework in construction crafts contains the SVQ Level 3 (SCQF level 6) in a variety of different craft occupations. The Modern Apprenticeship usually takes four years to complete and incorporates a *skills test* in the final year. SQA and SBATC are the joint awarding bodies, though the SVQ Level 3 Construction Painting and Decorating is also jointly awarded by SQA and SPADAC. The *skills test* is an industry requirement and is contained within the SVQ. While some of the colleges provide skill testing facilities, the test is operated independently from the colleges. In 2009, SQA introduced a suite of PDAs in construction crafts at SCQF level 6. The PDAs are designed to provide certification of candidates' achievement of the Training and Assessment Programmes (TAPs) which have been available since 2005. The TAPs were introduced to provide greater consistency in the delivery of the craft programmes across Scotland. The PDAs cover bricklaying, carpentry and joinery, painting and decorating, plastering, roof slating and tiling and cement work, stonemasonry, wall and floor tiling and wood machining. The PDAs form a component part of the appropriate Modern Apprenticeship. The construction craft SVQs are being re-accredited this year with the revised schemes due to be introduced in August 2012.

The Modern Apprenticeship in Plumbing is a four-year scheme with apprentices attending college part-time for the first three years. The SVQ level 3 in Plumbing is derived from the NOS set out by *SUMMIT Skills*. The SVQ is awarded jointly by SNIJIB and SQA. In contrast with the construction craft schemes, there is no separate skills test. The current scheme was introduced in 2010. It contains mandatory units and optional units where candidates choose one of four fuel options: gas; oil; solid fuel; and emergent technologies (two from solar water heating systems, heat pumps and water recycling systems). Candidates also require to achieve an additional unit (install weathering systems) as part of the Modern Apprenticeship, but this not part of the SVQ.

**Construction craft programmes: data for 2007-08 – 2009-10****Table 2: Construction craft programme  
Summary of data over three years**

The following information, gathered from data submitted to SFC by colleges relates to construction craft programme early retention, completion, and attainment over the last three years. The focus is on the number of full-time and part-time learners on FE and HE programmes. There are no full-time Higher Education programmes in construction crafts so this category of construction programme is excluded from the data.

**2007-08**

Mode	Level	Enrolled	Funded	Completed	Succeeded	Early retention	Completion	Success
FT	FE	4,074	3,680	2,968	2,710	90%	81%	91%
PT	FE	11,819	11,529	10,970	10,054	98%	95%	92%
PT	HE	1,049	1,014	964	858	97%	95%	89%

**2008-09**

Mode	Level	Enrolled	Funded	Completed	Succeeded	Early retention	Completion	Success
FT	FE	3,220	2,799	2,324	2,045	87%	83%	88%
PT	FE	11,954	11,275	10,327	9,144	94%	93%	89%
PT	HE	1,106	1,022	974	874	92%	95%	90%

**2009-10**

Mode	Level	Enrolled	Funded	Completed	Succeeded	Early retention	Completion	Success
FT	FE	3,323	2,917	2,329	2,047	88%	79%	88%
PT	FE	11,073	10,776	9,901	8,930	97%	94%	90%
PT	HE	1,119	1,051	979	902	94%	91%	92%

**Notes:**

1. The success rates in 2008-09 and 2009-10 are not directly comparable with those for 2007-08. This is because SFC changed the way it manages the outcome PIs from 2008-09.
2. The early retention figures in 2009-10 exclude courses where the funding qualifying date was reached in the previous academic year.

### Modern Apprenticeship success rates, data on *Skills Tests*

**Table 3 Extract from SDS, National Training Programmes Performance Report- April 2009 to March 2010, Modern Apprentices<sup>30</sup>**

Frameworks	Male	Female	Total
<b>Construction Modern Apprenticeships:</b>			
Number of starts	2,190	41	2,231
Number of leavers	3,190	44	3,234
Number in training	6,598	100	6,698
Number of Achievements	2,068	28	2,096
Achievements as % of all leavers	65%	64%	<b>65%</b>
<b>Plumbing Modern Apprenticeships:</b>			
Number of starts	325	6	331
Number of leavers	672	7	679
Number in training	1,399	25	1,424
Number of Achievements	498	5	503
Achievements as % of all leavers	74%	71%	<b>74%</b>
<b>All Modern Apprenticeship Frameworks:</b>			
Number of starts	11,743	8,473	20,216
Number of leavers	9,312	3,804	13,116
Number in training	24,801	8,932	33,733
Number of Achievements	6,390	2,842	9,232
Achievements as % of all leavers	69%	75%	<b>70%</b>

**Table 4 Skills Testing Data, ConstructionSkills, 2008-2010<sup>31</sup>**

Occupation/year of test	2008		2009		2010	
	Tests taken	% success	Tests taken	% success	Tests taken	% success
Bricklaying	234	85%	332	80%	199	85%
Carpentry and Joinery	1,060	91%	1,239	87%	1,021	92%
Floor Laying	18	94%	14	79%	-	-
Painting and Decorating	54	93%	240	83%	256	77%
Plastering	84	90%	92	80%	74	78%
Roof Slating and Tiling	61	84%	105	86%	80	90%
Stonemasonry	40	60%	42	64%	51	71%
Wall and Floor Tiling	31	100%	16	100%	28	96%
Wood Machining	15	100%	14	100%	10	100%
<b>Total</b>	<b>1,597</b>	<b>89%</b>	<b>2,094</b>	<b>85%</b>	<b>1,691</b>	<b>88%</b>

<sup>30</sup>

<http://www.skillsdevelopmentscotland.co.uk/media/141308/ma%20breakdown%20-%20all%20scotland.pdf>

<sup>31</sup> Data provided by ConstructionSkills Scotland, May 2011

**Glossary of terms**

BBC	British Broadcasting Corporation
CARES	Community And Renewable Energy Scheme
COSHH	Control of Substances Hazardous to Health
CSCS	Construction Safety Certification Scheme
CPD	Continuing professional Development
DGHP	Dumfries and Galloway Housing Partnership
FE	Further Education
FT	Full time
GRA	Glasgow Regeneration Agency
HMIE	HM Inspectorate of Education
HMI	HM Inspectors
HN	Higher National
HNC	Higher National Certificate
ICT	Information and Communications Technology
ILA	Individual Learning Account
ILP	Individual Learning Plan
LDB	Learn Direct and Build
NSSC	National Specialist Contractors' Council
NOS	National Occupation Standards
NPA	National Progression Award
PDA	Professional Development Award
PT	Part time
RM	Royal Marines
SAPCT	Scottish Association of Painting Craft Teachers
SATTT	Scottish Association of Timber Trade Teachers
SBATC	Scottish Building Apprenticeship and Training Council
SCQF	Scottish Credit and Qualifications Framework
SEAM	Sustainable Energy And Micro-renewables centre
SFC	Scottish Funding Council
SNIJIB	Scottish and Northern Ireland Joint Industry Board
SNIPEF	Scottish and Northern Ireland Plumbing Employers Federation
SPADAC	Scottish Painting and Decorating Apprenticeship Council
SQA	Scottish Qualifications Authority
STBSASE	Scottish Traditional Building Skills Audit Scoping Exercise
SVQ	Scottish Vocational Qualification
TAPS	Training and Assessment Programmes
TQ (FE)	Teaching Qualification (Further Education)
VLE	Virtual Learning Environment

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