Engineering Modern Apprenticeship Pathfinder Report

A report on the review of off-the-job training in Engineering Modern Apprenticeships by Education Scotland

Transforming lives through learning

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Context

The engineering sector makes an important contribution to, and is a vital part of, the Scottish economy. Scotland's engineering sector has been a historic part of Scotland's culture, and has a renowned reputation throughout the world for industrial and scientific innovation. The importance of the engineering manufacturing sector in Scotland to the economy is demonstrated well by a turnover per employee of £148,800, which is significantly higher than all the other industry sector figures for Scotland, whose mean average is at just over £84,000 per employee.

An enthusiastic and trained workforce underpins Scotland's ambition for economic success. Modern Apprenticeships are designed to support this goal by providing individuals with the opportunity to secure industry recognised qualifications while earning a wage. A Modern Apprentice (MA) may be a new or an existing employee seeking to increase their capability. As such, apprentices should receive training to match business needs.

Modern Apprenticeship opportunities are available across a wide range of sectors. Modern Apprenticeship frameworks are developed by licensed Sector Skills Councils (SSCs) and other Sector Skills Organisations (SSOs) recognised by the UK Commission for Employment and Skills (UKCES). The frameworks considered as part of this review include those engineering MAs within the SSC, Science, Engineering, Manufacturing and Technology Alliance (SEMTA) footprint, and more detail of their structure can be found at this weblink: www.skillsdevelopmentscotland.co.uk/media/1290372/engineering_ma_l3_dec_2014.pdf.

To help maintain momentum in developing the trade and vocational skill base for the Scottish economy, in January 2013, the Scottish Government established a Commission to consider ways to help young people gain improved access to employment and training opportunities. The commission was led by Sir Ian Wood and had the working title *Developing Scotland's Young Workforce*. It considered:

- How a high quality intermediate vocational education and training system could be developed to enhance sustainable economic growth with a skilled workforce.
- How to achieve better connectivity and cooperation between education and the world of work to ensure young people at all levels of education understand the expectations of employers, and that employers are properly engaged.
- How to achieve a culture of real partnership between employers and education, where employers view themselves as co-investors and co-designers rather than simply customers.

To address these challenges, the Commission's task was to deliver recommendations to ensure Scotland makes good progress in producing better qualified, work-ready and motivated young people, with skills relevant to modern employment opportunities. The Commission's report *Education Working for All!* made 39 recommendations and was published in June 2014.

To support and implement the recommendations of *Education Working for All!,* the Scottish Government published *Scotland's Youth Employment Strategy* www.gov.scot/Publications/2014/12/7750.

Within this publication, Education Scotland was commissioned by the Scottish Government to undertake an external review of the off-the-job training element of Modern Apprenticeship (MA) programmes. Education Scotland will undertake reviews of off-the-job training within each of the industry sectors over the coming years.

The strategic vision outlined by the Scottish Government in *Scotland's Youth Employment Strategy* is for a post-16 education and training sector in which:

- all provision, regardless of provider, is focused on providing young people with the skills, knowledge and attributes necessary to support Scotland's economic growth and maximise their life chances;
- all providers and their key stakeholders work together regionally and nationally to ensure high quality provision that meets the needs of learners and employers; and
- the relevance and quality of this provision, the extent to which it supports economic growth and post-16 reform, and the outcomes learners achieve are evaluated through an appropriate blend of self-evaluation, external scrutiny and public reporting through a national quality assurance and quality improvement system.

External review methodology

The external review of MAs by Education Scotland builds upon and complements Skills Development Scotland's (SDS) current quality assurance arrangements. These arrangements require all non-college training providers to demonstrate they are meeting SDS quality standards as set out in the SDS Quality Assurance Framework. SDS takes assurance of delivery within colleges from Education Scotland's college inspections. The external review arrangements encompass off-the-job training approaches within MA programmes and focuses solely on the contribution made by training providers and the quality of the training they deliver. The review team evaluated the work undertaken by a sample of colleges and independent training providers, referred to collectively as centres in this report.

A team of Her Majesty's Inspectors (HMI) from Education Scotland and Associate Assessors (AA), from SDS, colleges and independent training providers conduct external reviews. Associate Assessor input ensures that each review team has the expert knowledge and industry-related experience to ensure a full and well-informed review process.

External review approaches incorporate:

- Observation of training activities.
- Discussions held with provider managers and staff.
- Discussions held with employers and apprentices.

Upon conclusion of the external review, a short written report is provided to each training centre by Education Scotland. This includes the grades awarded for each of the six high-level questions posed during the review (see below). This report is not published but is shared with SDS, although centres can choose to share their individual reports after the main report is published The findings from each of the visits are brought together to generate a national report which is published by Education Scotland on behalf of the Scottish Government. These, national reports are designed to inform Ministers on the quality of the off-the-job training element within specific MA programmes. The report will also assist providers in preparing and implementing their quality improvement and enhancement agendas and identify examples of excellent practice.

For this review of engineering MAs, the team visited the following training providers between April and June 2015:

- East Kilbride Group Training Association.
- Forth Valley College.
- Angus Training Group.
- Edinburgh College.
- North East Scotland College.
- Nigg Skills Academy.
- West College Scotland.
- Tullos Training.
- Ayrshire College.

During these visits, Education Scotland evaluated the provision of providers' off-the-job training. Before these reviews there was agreement between Education Scotland and SDS that since apprentices in Engineering mostly follow the SEMTA MA framework, this would be the focus of the reviews. SEMTA is the Sector Skills Council for Science, Engineering and Manufacturing Technologies, and represent a wide range of industry sectors including aerospace, automotive, bioscience, electrical, electronics, maintenance, marine, mathematics, mechanical, metals and engineered metal products.

In the SEMTA framework, each Learning Pathway consists of four components: core skills, foundation, educational and sector specific Scottish Vocational Qualification (SVQ). For this review, Education Scotland evaluated the delivery of the off-the-job training elements in core skills, the Performing Engineering Operations (PEO), the National Certificate (NC) in Engineering Practice and the Higher National Certificate (HNC) and Higher National Diploma (HND) in Engineering.

The National Quality System

The framework and model for the external review are based upon the quality elements from the National Quality System, designed by Education Scotland, in collaboration with partners such as the SQA, SDS, Scottish Government, and industry partners.

The national report has a grade for each of the questions within the high level principles. The four high level principles are:

- Outcomes and Impact.
- Delivery of Training.
- Leadership and Quality Culture.
- Capacity for Improvement.

Grades are awarded for the following six questions in the four high level principles:

1. Outcome and Impact

How well are apprentices progressing and achieving relevant high quality outcomes?
How well do we meet the needs of our apprentices, employers and stakeholders?

2. Delivery of Training

How good is our delivery of training?
How good is our management of training delivery?

3. Leadership and Quality Culture

How good is our strategic leadership?

4. Capacity to Improve

A capacity to improve judgment based on evidence from all key areas above, in particular Outcomes, Impact and Leadership.

Grades

The grades which will be awarded to each of the elements are:

- **EXCELLENT** – *Outstanding and sector leading.*
- **VERY GOOD** – *Major Strengths.*
- **GOOD** – *Important strengths with some areas for improvement.*
- **SATISFACTORY** - *Strengths just outweigh weaknesses.*
- **WEAK** – *Important weaknesses.*
- **UNSATISFACTORY** – *Major weaknesses.*

Grade illustrations

- An evaluation of **excellent** applies to provision in which apprentices' experiences and achievements are of a very high quality. An evaluation of *excellent* represents an outstanding standard of provision which exemplifies very best practice and is worth disseminating beyond the current provision. It implies that very high levels of performance are sustainable and will be maintained.

- An evaluation of **very good** applies to provision characterised by major strengths. There are very few areas for development and any that do exist do not significantly diminish apprentices' experiences. While an evaluation of *very good* represents a high standard of provision, it is a standard that should be achievable by all. It implies that it is fully appropriate to continue to make provision without significant adjustment. However, there is an expectation that the centre will take opportunities to improve and strive to raise performance to excellent.

- An evaluation of **good** applies to provision characterised by important strengths which, taken together, clearly outweigh any areas for development. An evaluation of *good* represents a standard of provision in which the strengths have a significant positive impact on apprentices. However, the quality of apprentices' experiences is diminished in some way by aspects in which development is required. It implies that the centre should seek to improve further the areas of important strengths, but take action to address the areas for development.

- An evaluation of **satisfactory** applies to provision characterised by strengths which just outweigh areas for development. An evaluation of *satisfactory* indicates that apprentices have access to a basic level of provision. It represents a standard where the strengths have a positive impact on apprentices' experiences. However, while the areas for development will not be important enough to have a substantially adverse impact, they do constrain the overall quality of apprentices' experiences. It implies that the centre should take action to address areas for further development while building on its strengths.

- An evaluation of **weak** applies to provision which has some strengths, but where there are important areas for development. In general, an evaluation of *weak* may be arrived at in a number of circumstances. While there may be some strengths, the important areas for development will, either individually or collectively, be sufficient to diminish apprentices' experiences in substantial ways. It implies the need for prompt, structured and planned action on the part of the centre. Where a grading of weak is given, it will lead to follow-up activity from SDS compliance managers.

- An evaluation of **unsatisfactory** applies when there are major areas for development in provision requiring immediate remedial action. Apprentices' experiences are at risk in significant respects. In almost all cases, staff responsible for provision evaluated as unsatisfactory will require support from senior managers in planning and carrying out the

necessary actions to effect improvement. This may involve working alongside other staff or agencies in or beyond the immediate support given by the centre. Where a grading of weak is given, it will lead to a follow-up review by staff from SDS and Education Scotland within a year.

Findings

The review of Engineering MAs

Inspectors observed learning and teaching and other important activities that impact upon the quality of the apprentice experience. These were evaluated against the four high-level principles of Outcomes and Impact, Service Delivery, Leadership and Quality Culture and Capacity to Improve; using the 12 reference quality indicators outlined in Education Scotland's *External quality arrangements for the review of Modern Apprenticeship Off-the-job training April 2015*
www.educationscotland.gov.uk/inspectionandreview/about/modernapprenticeships/index.asp.

The summary grades awarded for each of the six questions are presented below.

1. Outcome and Impact		2. Delivery of Training		3. Leadership and Quality Culture	4. Capacity for Improvement
How well are apprentices progressing and achieving relevant high quality outcomes?	How well do we meet the needs of our apprentices and stakeholders?	How good is our delivery of training?	How good is our management of training delivery?	How good is our strategic leadership?	How good are internal evaluation and self-reflection activities to ensure we have the capacity to improve and enhance the delivery of training?
excellent	very good	very good	excellent	very good	very good

Summary of Findings

Areas of Strength

- In all centres, staff delivering MA provision ensure programmes achieve, and in many cases exceed, the lead-body standards.
- There are very high attainment levels on the PEO, NC and HN programmes and very low withdrawal rates.
- Many apprentices achieve national awards as part of their work on their MA programme.
- Providers have well-considered and robust business plans with active promotion of engineering apprenticeships to young people.
- All centres have developed very positive relationships with employers over time and employers value highly the work undertaken by training providers in recruiting apprentices.
- There is a high priority on health and safety practices and procedures in all centres.
- There is flexibility in the design and implementation of schedules, developed in partnership with employers, delivered at times which suit both employers and apprentices.
- All centres offer additional units within the PEO, and offer additional bespoke programmes or units to apprentices to assist them to be more effective when they return to their employer.
- Most centres capture feedback from apprentices effectively and use it well to make improvements in their training.
- Apprentices are highly-motivated and engage productively in their learning.
- Apprentices are very satisfied with the training they receive and the delivery of their programmes.

- Many centres have well-considered pre-apprenticeship programmes to help learners make the transition from school to further study and work.
- Staff use effective learning and teaching approaches which apprentices clearly enjoy and find engaging.
- All colleges have appropriate articulation arrangements with universities to support apprentices who wish to pursue advanced-level studies.
- Staff are knowledgeable, well-qualified, experienced and positive about their roles.
- Learning and teaching approaches are planned well by delivery staff.
- All apprentices develop confidence by working in groups or independently as required.
- Accommodation and equipment are generally of a high standard and centres benefit from significant sponsorship arrangements with employers and suppliers.
- Staff delivering training use quality assurance arrangements well to identify strengths, and areas for development. This helps them to promote enhancements positively.
- Regular and effective verification meetings ensure that apprentices are meeting the appropriate standards, and that enhancements are made on a continual and on-going basis.
- Many centres promote green energy and renewable approaches, incorporating these in their curriculum in line with government priorities.
- Providers have a clear strategic direction for the development of MAs and in particular the growing demand for Science, Technology, Engineering and Mechanics (STEM) related provision.
- Apprentices' successes are celebrated well through award ceremonies, with the distribution of trophies and prizes from sponsoring affiliated companies.

Areas for Development
- In the on-going challenge of recruiting female apprentices, success of initiatives is variable.
- Many apprentices have to repeat communication units, even though they have already achieved the prescribed level for the award.
- The content of some core skills units is not contextualised to an engineering setting, making the learning less relevant for apprentices.
- Most apprentices are not fully aware of how they might be involved in planning the delivery of their learning.
- There is limited coordination between staff from different centres to jointly plan and integrate learning between the PEO and the NC and HN engineering elements.
- Centres have not sufficiently planned for emerging DYW opportunities such as Foundation apprenticeships.
- Opportunities for employers to engage fully in the evaluation of their trainees MA programme are not yet fully developed.
- In a few colleges, there is insufficient focus or formal recognition in the college's Scottish Funding Council (SFC) Outcome Agreement on the provision of pre-apprenticeships and formal apprenticeship programmes in this important industry sector.
- Poor connectivity through the Virtual Learning Environment (VLE) in colleges and regular breakdown and poor reliability of Information, Communication Technology (ICT) equipment such as interactive white boards, impacts negatively on apprentices' experiences.
- In a few centres, self-evaluation arrangements are insufficiently systematic and robust.
- In many centres, there are few formal feedback mechanisms to ensure apprentices are informed in relation to quality improvement and enhancement issues raised or improvement actions taken by staff.

- Actions from staff meetings are not consistently recorded and there are no Specific, Measureable, Achievable, Realistic and Time-bound (SMART) targets or clear responsibilities for improvement actions.

1. Outcomes and Impact

> How well are apprentices progressing and achieving relevant high quality outcomes?
>
> GRADE: excellent

How effective is the centre at achieving and maintaining high levels of service delivery?

All of the training centres visited have well-considered and robust business plans for the provision of their MA programmes. These identify clear strategic objectives which respond well to local and national priorities and meet the needs of employers, apprentices and the Scottish Government. In the centres visited, there are appropriate strategies for growth in engineering related industries, in response to national priorities such as *Developing the Young Workforce* (DYW) and the SDS *Skills Investment Plan for Engineering.*

For example, many of these objectives are held within Outcome Agreements that colleges have agreed with the SFC. In one college engineering department, the growth strategy is focused on the development of a STEM Academy, which is supported by SFC funding.

In the centres visited, staff actively promote engineering apprenticeships to young people in schools as a career option in line with the Scottish Government employability agenda. Through invites to local schools, staff from training centres encourage younger learners to consider engineering career opportunities. For example, a manager from one independent training provider visits local schools regularly to discuss career options with young people and has received an award from a local authority for his work. However, the opportunity to plan for the emerging opportunities within Foundation Apprenticeships in Engineering, a major initiative for learners in their senior phase through DYW, has not been embraced sufficiently by all centres. This lack of planning is because centres are either unaware of the initiative or do not have the appropriate resources to deliver them.

Excellence example – Foundation Apprenticeships

East Kilbride Group Training Association
Managers and staff at East Kilbride Group Training Association (EKGTA) are very proactive in developing a Foundation Apprenticeship programme for local senior phase school pupils. The success of their plans to deliver the programme has led to two neighbouring local authorities seeking to send approximately 30 pupils to EKGTA for the introduction of the Foundation Apprenticeship in Engineering. The pupils will undertake the programme over two years and will be provided with a training allowance to help them attend the centre during school holidays and twilight classes. This partnership approach with schools will provide an experience for young people which will satisfy their training needs, provide a focal point for potential MA recruits when they leave school and help to reduce the gender imbalance which currently exists within engineering. At the time of publication of this report, the programmes are proving very popular with pupils and are over-subscribed.

Apprentices achieve very good results in the attainment of their qualifications in the off-the-job training element of an MA. In all centres, these are very high, with over 95% of apprentices regularly attaining their qualifications. Progression onto Level 3 programmes, on-the-job

training (SCQF level 7) is very high. Withdrawal rates of apprentices from their programmes are very low. Withdrawals are usually because an apprentice has been made redundant. However, independent training providers in particular, help those apprentices who leave because of redundancy, by placing them with one of their other member companies. This can be supported by the *Adopt an Apprenticeship* recruitment incentive administered by SDS through contracted providers, allowing them to finish their apprenticeship and complete their training programme.

For most centres however, their business plans do not promote sufficiently the recruitment of more females into engineering apprenticeships. The MA in engineering is a particularly male dominated framework, reflective of the gender segregation of the engineering workforce. According to the latest published statistics from SDS[1], there are 4394 Engineering modern apprentices in training and of these, approximately 4%, or 165, are female.

There are examples where centres have tried to address the lack of females in training. In these centres, recruitment of female MAs is higher than the national average of 4%. For example, one centre delivers a *Girls into Engineering* initiative during Modern Apprenticeship Week; another deliberately recruits more female teaching staff to help attract more female apprentice recruits; and, one centre has a *Young Women into Energy* initiative.

To identify approaches to address gender imbalance a few centres have engaged in preliminary discussions with *Equate Scotland* in order to benefit from their knowledge and expertise. However, the success of approaches and initiatives to address proactively recruitment of females into engineering programmes, has had very limited impact. It is clear that with only 4% of engineering apprentices being female, there is much work left to be done to create a more appropriate gender balance in recruits to MAs. This includes working with schools to help ensure more female pupils are encouraged to apply for engineering apprenticeships.

Employers value highly the work of centres in recruiting apprentices on their behalf. For example, staff from independent training providers interview and test groups of prospective apprentices and pass their details onto prospective employers within their training association. This approach has the benefit of ensuring that future apprentices have the right blend of ability and skills to make a success of their apprenticeship experience. It also provides training providers with the opportunity to influence employers in taking positive action in their recruitment processes.

Excellence example

Nigg Skills Academy – Accelerated MA delivery
Nigg Skills Academy delivers an accelerated MA programme developed in partnership with employers to address skills shortages in the oil and gas industry. The programme can be completed within an 18 month period because candidate recruitment is of a suitably high standard. The off-the-job element of the MA is undertaken within an industry-standard environment over a 16 week period. During this time, the trainee achieves the eight-unit PEO, and the 12 module National Certificate, including the core skills elements.

Almost all of the course content is embedded in delivery, with theory elements contextualised to a workshop setting. Apprentices apply core skills in all aspects of their work which helps them to understand and attain the standards required for working in high-risk environments.

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[1] http://www.skillsdevelopmentscotland.co.uk/statistics/modern-apprenticeships/

Welding apprentices achieve additional qualifications and certificates for coded welding, which are validated by Lloyds. Each apprentice is trained using their own company's generic weld procedures and they gain credits for performance criteria within several elements of the MA, alongside contextualised experience.

How well do centres adhere to statutory principles and guidance?

In all centres, staff delivering MA provision ensure programmes achieve, and in many cases exceed, the lead-body standards. Regular standardisation meetings held by centre staff ensure that programmes comply with awarding body policies and procedures. Regular and effective verification meetings ensure that apprentices are meeting the appropriate standards, and that enhancements are made on a continual and ongoing basis.

In most cases, close liaison with SDS Skills investment Advisers helps to address actions generated from SDS centre visits. These visits are highly valued by centre managers as they provide useful opportunities to discuss SDS standards and make improvements to MA programmes.

All centres place a high priority on health and safety practices and procedures. They set and achieve high standards in health and safety practice within workshops and reinforce site practice safety for apprentices. All employers comment very positively on this aspect of apprenticeship training, as it serves them well when their apprentices return to the workplace.

Excellence example

Ayrshire College – The Bulldog Programme

The Bulldog aircraft maintenance course is designed for a maximum of eight to ten apprentices, where they work closely with a licensed aircraft engineer. The member of staff also holds specific aircraft type approvals and this was identified as an area where the college could target a specific industry need.

Maintenance tasks are set out to reflect current aircraft servicing practices and the college aircraft hangar is treated as a live, working environment. Tasks are performed with health and safety procedures at the forefront of activities at all times. Some of the tasks on the programme involve raising the aircraft off the ground, removing the engine and inspecting it using a bore scope and removing the aircraft's wings and fuel tanks. Apprentices are divided into groups and given tasks to complete to improve their teamworking and problem-solving skills. They are shown how to record information on control parts removal, to inspect and reinstate them, and also how to complete log books. Tool control issues are also explored. The apprentices found the course to be very beneficial and it has given them a highly relevant and valuable learning experience.

How well are apprentices progressing and achieving relevant high quality outcomes?

Almost all apprentices are progressing well and are achieving relevant high quality outcomes. They develop high levels of essential skills, including very high attainment levels in core skills units. In many cases, apprentices with higher level qualifications access appropriate HNC programmes. In one centre, effective scheduling supports apprentices to complete their HNC one year sooner than planned, providing many with the flexibility to be released earlier for shift work with their employer.

All centres are very flexible in the design and implementation of schedules for MA programmes. Training schedules are developed in partnership with employers and centres deliver training at times which suit the employers and their apprentices' needs. For example, some centres will offer either block or day release options for training. In two centres, apprentices follow bespoke arrangements and schedules which mirror exactly their employers' work practices in the oil and gas sector. This helps the apprentice anticipate the working environment expectations. In another centre, a large local authority sends apprentices on a four-week block basis, which suits the needs of the authority very well.

A few centres offer additional bespoke courses to apprentices to assist them to be more effective when they return to their employer. For example, in one centre all welding apprentices gain coded welding qualifications, in line with the work demands for their employer, as an additional component to their course. In another independent training provider, an apprentice who completed his welding component early was provided with extension work on an advanced welding simulator, which is far beyond the minimum standard required for the unit. The apprentice and his employer are delighted with this approach to develop new skills and provide additional challenge.

All centres offer additional units within the PEO, which reflect the work practices in industry and are more relevant to apprentices in the workplace. In many cases, this goes beyond the stipulated minimum number of units required for the PEO. For example, one centre offers a course in pneumatics for external customers, but identified the value in incorporating this as a unit in the PEO, which employers find useful and apprentices find relevant.

Most centres capture feedback from apprentices effectively and use it well to make improvements in their training. Staff carry out regular performance meetings with apprentices and report on their progress to the employer or managing agent. However, in some cases, the evaluations from these meetings are not regularly shared with other staff in the teams to help inform improvement plans. Centres are able to record and track apprentice achievements effectively and provide reports on their progress to the apprentices and their employers. For example, one independent training provider uses bespoke computer software to track apprentices effectively from recruitment to post-completion of their apprenticeship. In this way, the centre provides employers and apprentices with easy access to track progress and recognise their achievements.

Excellence example

East Kilbride Group Training Association – All-through tracking and accessibility of apprentice data

East Kilbride Group Training Association (EKGTA) delivers the recruitment process for apprentices on behalf of their member companies. The apprentices who pass this section of the process are put forward to their members for final interview. Staff at EKGTA are able to monitor the apprentices as they come through the process. On-going reviews of progress for these apprentices throughout their training is held by EKGTA and is accessible to apprentices, staff at EKGTA and their employers. This allows Training Advisers and staff at EKGTA to discuss progress over a lengthy period with apprentices and with their employers. This provides a useful focus on improvement for apprentices and offers very strong links between the skills requirements of their employers and the planning and delivery by EKGTA.

Many apprentices win national awards or competitions as part of their work on their MA programme. In one centre, apprentices won a national 1st year Apprentice of the Year competition four years running. Commendably, some centres celebrate the success of apprentices with annual awards ceremonies, inviting employers, parents and carers to share in apprentices' success.

How well does training meet the needs of apprentices and employers?

All providers respond very well to their employers or managing agents' priorities for training. There are regular and effective discussions about their apprentice's progress and meetings with them help to ensure their priorities are identified and acted upon. This is exemplified in the many instances in which employers and apprentices select relevant and appropriate optional units in the PEO. For example, in one independent training provider, the centre changed the structure of their training to reflect a significant increase in employer demand for electrical maintenance programmes. In another, a dedicated website for employers and apprentices is to be launched, in response to feedback for specific information on MA programmes. However, although employers are consulted widely on a range of issues, opportunities for centre staff and employers to engage in evaluation of MA programmes are not yet fully developed.

Each of the independent training providers visited has a Board of Management which is made up from its constituent member companies. This approach is highly influential in ensuring centre management delivers training programmes which match well the business needs of member companies.

All the employers involved with the fieldwork report very positively on their experiences with training providers and are highly satisfied with the services they receive. All of the apprentices in the centres visited are satisfied with the training they have received and are complimentary about the quality of the resources, staff expertise and the delivery of their programmes. Almost all apprentices attain their core skills units. However, in many instances, apprentices have to repeat communication units, even though they have already achieved the prescribed core skill level for the award. These apprentices find this approach dull and unrewarding. For many apprentices, the content of the core skills communication and numeracy units is not contextualised sufficiently to an engineering setting. This makes their learning experiences less relevant to them and they lose the opportunity to develop their core skills within an appropriate industry context. This lack of relevance is unwelcome and can hold apprentices back from developing important essential skills. As a result, core skills can become insufficiently embedded within some programmes and are perceived by many apprentices and staff as stand-alone qualifications, rather than an integrated element of their training.

2. Delivery of Training

How good is our delivery of training?

GRADE: very good

How well does training meet the needs of apprentices and employers?

Centres offer an appropriate range of programmes within the SCQF levels 4-7, with opportunities available at college for progression onto Level 8 and above. Almost all centres have well-considered pre-apprenticeship programmes to help pupils make the transition from school to further study and work. All colleges have appropriate articulation arrangements with universities to support apprentices who wish to pursue advanced studies.

Off-the-job training is well-designed and meets the needs of apprentices and employers well. Centres have developed very positive relationships with employers. This results in apprentices receiving training which is valued by their employers and is relevant to their place of work. For example, one major employer provides metal plate to a college welding workshop, which is exactly the same thickness and type as the plate used in the employer's premises.

Almost all apprentices are highly motivated and engaged and are progressing well in their learning and achieving their goals and targets. They are committed to developing skills which relate well to their workplace requirements and they recognise the good progress they are making in achieving these skills.

Apprentices are fully aware of how to access additional support. Those with identified learning support needs find arrangements effective and helpful. However, in some cases, screening arrangements for identifying support needs in employer, managing agent or centre premises are over-reliant on the availability and expertise of an individual member of staff.

How well is training delivered?

In all centres, training is very well planned and organised. Staff use effective learning and teaching approaches which apprentices clearly enjoy and find engaging. Well-considered training schedules and lesson plans are used regularly. Almost all staff are knowledgeable, experienced and well-qualified to deliver apprenticeship programmes.

Generally, staff work well together to share their knowledge and ideas. Informal discussion between staff members takes place regularly and is valuable in exploring different types of learning approaches and use of resources. Many staff use these opportunities to improve programme delivery. Regular standardisation and verification meetings ensure that staff comply with lead body standards. However, staff from colleges and those from independent training providers do not always communicate effectively with each other to support joint planning or coordination of learning, between the PEO and the NC or HN engineering programmes. For example, in one centre, apprentices on a PEO unit had finished a project in which their successfully completed materials could have satisfied assessment criteria in their PEO, NC and core skills units. A joint mapping exercise between staff could have integrated these unit criteria.

Staff have very good relationships with apprentices. They are very well regarded and respected by apprentices, and in many cases, deliver high-quality, one-to-one support to apprentices, which is very effective in helping them progress at their own pace.

All apprentices develop confidence by working in groups or independently as required. Peer working is used well by staff to support the development of team working and vocational understanding. Staff reinforce industry expectations around workplace behaviour and standards and this features prominently across all aspects of apprentices' training.

In core skills communication and numeracy units, which are generally delivered by college staff, poor contextualisation of the subject material diminishes the learning experience for many apprentices. Better coordination between servicing core skills staff and engineering department staff in colleges, would ensure appropriate contextualisation and mapping of outcomes, against other engineering elements of the MA.

Centres have invested effectively to ensure that their accommodation, equipment and resources are of a high standard and cater well for the development of appropriate skills. In almost all centres, accommodation is spacious and equipment is at the industry standard. High quality resources are used confidently by apprentices and staff. However, in a few centres, accommodation is dated, and connectivity through the VLE and other ICT resources, is slow. In a few centres, regular breakdown and poor reliability of ICT equipment such as Smartboards, has a negative impact on apprentices' experiences.

In some centres, the use of the VLE resources by staff members is variable. Given the importance of VLE materials in supporting apprentices' skills development, there are instances where apprentices in colleges do not make best use of online resources, simply because a staff member is not aware of the resources or is not confident in using the VLE.

Excellence example

West College Scotland – Scottish Electrical Charitable Training Trust (SECTT) virtual learning environment
The college is actively engaged in enhancing the learning experience by supporting learners through the use of Moodle, a college-based VLE. The success of this approach has resulted in staff delivering the SEMTA MA framework developing an effeciove model of the VLE for their apprentice, based on the model below.

At the request of SECTT, the college developed a branded solution for the VLE that has now been adopted by all colleges currently operating the SECTT MA scheme. This means that apprentices can engage in learning outwith the traditional classroom environments and workshop settings and utilise peer-learning through the use of discussion forums, webmail and participation in online group activities.

How well do staff reflect on provision to improve training?

In colleges, staff delivering training use college-wide quality assurance arrangements to identify strengths and areas for development and promote enhancements. In most cases, programme review meetings are effective in evaluating the training provision and monitoring the implementation of improvements. However, in some cases MA programmes are incorporated alongside other college engineering provision and are insufficiently disaggregated to provide a specific focus on MAs. This limits the capacity of staff to deliver SMART actions for improvement and track their progress.

In Independent training providers, staff undertake self-evaluation against the SDS Quality Standards as outlined in the SDS contract and the SDS Quality Assurance Framework. Managers have overall responsibility for actions stemming from these discussions and any follow-up activities which may result. Standardisation meetings and external verification reports are helpful in ensuring centres are complying with lead body standards. Managers can identify changes and adjustments following individual reflection and group discussions. However, in most cases, reflection on learning and teaching activities and approaches in Independent training providers is informal and inconsistent.

Almost all apprentices report that direct feedback to staff delivering their programme generally leads to improvements. In most colleges, apprentices elect class representatives to meet formally with staff and discuss the experiences of the group on the programme. There are many examples where college-based engineering learners, mixing in class with MA learners, resulted in sharing ideas and experiences. However, for many apprentices, they are insufficiently aware of the class representative system and how it can help to influence the planning or delivery of training.

How well do employers and apprentices participate in the development and planning of training?

Employer forums and strong employer engagement across the engineering sector provides strong intelligence to inform off-the-job programme planning and delivery. Effective, regular communication with employers, based on mutual respect and a strong commitment to employer engagement, allows centres to share plans and targets for the future with local companies. For example, in one independent training provider, technology and equipment has been introduced to the MA programme in response to welding practice developments, which are informed and supported by employers.

Employer members in Independent training providers have the option to add additional units if they require them for their specific needs. These are then planned into delivery. However, generally, apprentices do not have opportunities to contribute to the discussions of the delivery of content of the programme. Although apprentices can identify discussions, through monitoring carried out by their assessors and employers, where targets are reviewed and adjustments made, they are not fully aware of how they might be involved in planning the delivery of learning or activities.

In most centres, feedback questionnaires are completed during and after training sessions by employers and apprentices. The information contained within these surveys is considered in planning future delivery approaches. In one independent training provider, external verification reports are summarised by managers and are circulated to all staff for information, which provides reassurance about standards and helps to identify areas for improvement which are tracked through quality assurance arrangements.

For most centres, their SDS contract management team liaises well with managing agents and employers to align programme content with employer requirements. These collaborative arrangements are effective in communicating apprentice progress to managing agents and employers.

Regular standardisation meetings are used to ensure compliance with awarding body quality arrangements. These meetings ensure consistency of approaches across centres and teaching staff and support informal discussions on delivery approaches. However, the focus of standardisation meetings is mostly restricted to assessment and compliance and does not focus on the delivery of training.

How well does the centre work with partners to improve outcomes for apprentices?

Centres have strong and effective collaborative partnerships with high profile employers and agencies, as well as many smaller employers. Valuable sponsorship arrangements have been developed with industry, which enhance the facilities, equipment and provision to the benefit of apprentices. For example, very strong relationships exist with manufacturers, centres and schools and industry through development of the new STEM Academy, an SFC funded initiative.

Many centres focus on green energy and renewables themes, incorporating these into their curriculum in line with government priorities. For example, one centre engages well with the Energy Skills Partnership, benefiting from support provided with curriculum planning and development, donated equipment and productive networking arrangements.

Staff have established very positive relationships with employers in the recruitment of apprentices. They are responsive to requests for recruitment of workforce requirements and actively promote a recruitment service provision. Employers are very satisfied with this service as it ensures they have a strong pool of prospective apprentices from which to recruit.

College Regional Outcome Agreements (ROA) outline a commitment to maintaining MA programmes and aligning activity to regional employer demand, to support the skills needs of their region. For example, one college has developed a comprehensive and well-considered *Regional External Engagement Strategy* that identifies key stakeholders. The strategy explains clearly what MA programmes are, how the college aligns with government targets for recruitment, the relationship of MAs to industry and qualification routes and information for employers about MAs. However, in a few colleges, there is insufficient focus or formal recognition contained within the college's SFC Outcome Agreement on the provision of pre-apprenticeships and formal apprenticeship programmes.

Excellence example

North East College Scotland – preparing apprentices for their MA

The college recognised that there was a lack of understanding of the content and attainment levels associated with MAs among a range of stakeholders. The college sought to promote an understanding of the components of an MA and the journey taken by apprentices, as well as raise the profile of these qualifications. A 'Work, Earn and Learn' brochure was created to explain the content of MAs in a clear and concise way for apprentices and employers. It was distributed via events, mailings, in person, within campuses and as a download on the website. The brochure provides potential applicants and enrolled apprentices a clear insight of the MA journey. It details expectations from all perspectives and enables all stakeholders to appreciate how and when each stage is completed.

Almost all centres have curriculum plans which take full account of the strategic priorities of the external bodies which influence the curriculum. For example, there are many well-designed curriculum pathways that include articulation routes for apprentices progressing to further study

at universities. Another example highlights the strong links with industry for apprentices by developing an Oil and Gas Academy for Scotland (OGAS), which supports government priorities for the oil and gas sector and meets the needs of employers in these industries. The centre benefits from significant industry sponsorship which enhances the facilities, equipment and curriculum provision for apprentices.

Through the partnerships that exist between centres and their range of employers, many apprentices affected by redundancy are supported in their search for new employment. This proactive effort to support apprentices enables them to remain in training during the time they are searching for a new employer.

In all cases, an open-door policy provides opportunities for employers and industry representatives to visit apprentices whenever they choose, creating excellent relationships and trust between employers, centre managers and staff. Centres benefit from significant and effective sponsorship arrangements with employers and suppliers which results in general and specialist industrial equipment being made available for apprentice training. These effective communication links are highly valued by employers, creating very positive relationships that are responsive and accommodating to employers' needs and their workforce requirements.

3. Leadership and Quality Culture

> How good is our strategic leadership?
>
> GRADE: very good

How effective is leadership for partnership working and delivery of training?

Training providers have a strong strategic direction for the development of MAs and in particular the need for STEM-related provision. In many cases, employers are fully involved in the strategic and operational planning of MA engineering programmes. For colleges, this is articulated clearly in the strategic aims in the college's Regional Outcome Agreement. In independent training providers, the Board sets out clearly the aims and objectives of the organisation.

Managers in most centres provide purposeful direction and leadership for the delivery of modern apprenticeship programmes. Regular team meetings between managers and staff ensure close monitoring of provision. Managers provide clear and effective team leadership. Through regular and effective communication, including formal and informal meetings, staff feel consulted and their contributions are valued. Teaching staff have a clear understanding of their roles and are fully committed to ensuring engineering MAs have positive learning experiences and achieve successful outcomes. However, in a few colleges, although the vision and strategy for increasing engineering apprentice provision is well defined, there is insufficient focus or formal recognition contained within the college's SFC Outcome Agreement on the provision of pre-apprenticeships and formal apprenticeship programmes. This makes it difficult to ascertain how well the college is achieving its objectives.

Engineering staff are highly motivated and enthusiastic about their roles and have a strong commitment to meeting industry standards. Regular team meetings between managers and staff ensure close monitoring of programmes. Staff are positive and enthusiastic about their roles. Team leadership is strong and staff feel consulted, with their contributions valued. However, in a few centres, opportunities for teaching staff and apprentices to be involved in curriculum design development are not yet fully developed.

Excellence example

Tullos Training - Aberdeenshire

The centre has worked with Your Future in Energy and Aberdeenshire Council over the past two years to develop a three to four year programme in engineering that offers PEO level 1 to S1 - S3 school learners A large number of pupils have been enrolled from two local schools which greatly exceeds expectations. The aim of this programme is to encourage young learners into engineering at an earlier age than late secondary school, and provide an opportunity for more females to consider a career in STEM subjects. An enhancement to this programme, which is currently in the planning stage, is a system to fast-track more able pupils by referring them to independent training centre hubs established with employers. The overall vision of this well-considered initiative is to improve the calibre and quality of trainees entering the engineering workforce.
Staff, learners and employers are all involved in planning of learning and employers are given the option to choose units that best match their business needs. Learners have opportunities to suggest project work that they wish to undertake, or that suits their work-related experiences.

How well do leaders secure improvements in the quality and impact of training?

A wide range of opportunities have been developed to help centres engage with employers, staff and apprentices, to secure improvements in the quality and impact of training. Apprentices are consulted regularly to evaluate their progress and identify personal improvement targets. These activities include apprentices participating in weekly review meetings, satisfaction questionnaires and focus group discussions to plan future learning and inform enhancement to future provision. Many employers engage productively with centres to direct specific training requirements for their own apprentices and participate in the delivery of the programmes as visiting speakers to enhance delivery and motivate learners. However, there are few formal feedback mechanisms in place to keep apprentices fully informed in relation to quality improvement and enhancement issues raised or actions taken.

Managers and staff meet regularly to discuss progress, evaluate performance and identify improvement targets. Staff are consulted to identify where purchase of additional, specialist vocational equipment would enhance programme delivery. Staff meet regularly with managers to address operational issues and discuss needs of individual apprentices. This is recorded and appropriate actions taken. Apprentices are confident about raising issues relating to support or curriculum delivery through informal communication with their tutors and department staff. However, in some centres, self-evaluation arrangements are insufficiently systematic. For example, during formal meetings, arrangements for team discussions are not sufficiently robust, do not capture the employer or apprentice voice and are not linked to action planning to improve and enhance the quality of delivery. Actions from these meetings are not recorded consistently and there are no SMART targets or clear responsibilities to track the success of improvement actions.

4. Capacity for Improvement

How good is our capacity to improve?

GRADE: very good

How good are our internal evaluation and self-reflection activities to ensure we have the capacity to improve and enhance our provision and delivery?

Training providers have a clear vision and strategy to meet industry needs and expand MA provision that responds well to government priorities. Centres have made good progress in developing operational processes and policies to support their delivery.

All staff are highly committed and motivated about their work and the delivery of services to best meet the needs of apprentices and employers. They have very good vocational knowledge and an understanding of the aims of the centre in providing high quality training. However, in a few centres, self-evaluation procedures do not routinely fully engage staff and apprentices in formally evaluating provision.

Managers provide clear and effective team leadership through regular and effective communication, including formal and informal meetings. Managers and staff meet regularly to discuss progress, evaluate performance and identify improvement targets. The planning of delivery is very well organised. However, in some centres, the delivery of core skills is insufficiently contextualised to an engineering context. Apprentices also have to repeat already achieved core skill units. Whilst this does not impact negatively on attainment, it diminishes apprentices learning experiences.

Attainment rates on programmes and progression rates for apprentices are very high. Programme withdrawal rates are very low. Almost all apprentices are engaged, confident and motivated in undertaking their training and feel well informed of their progress and achievements. Apprentices are confident about raising issues through informal communication with their tutors, trainers and department staff.

In all cases, there are excellent relationships and trust between employers, centre managers and staff. Centres benefit from significant and helpful sponsorship arrangements with employers and suppliers which results in general and specialist industrial equipment being made available for apprentice training. These effective communication links are highly valued by employers, creating very positive relationships that are responsive and accommodating to employers' needs and their workforce requirements.

Feedback from employers and apprentices is very positive and informs the review and development of future provision. However, in most centres, apprentices are not yet fully aware of how they might influence the delivery of training.

Recommendations

Colleges and independent training providers should:

- ensure that apprentices do not repeat previously achieved levels of core skills units as part of their MA programme;
- take action to contextualise core skills units with industry relevant examples and content to challenge apprentices and develop and improve their core skills;
- create plans to help deliver the senior phase through appropriate DYW strategies, including recruiting more female apprenticeships from schools and offering Foundation Apprenticeships in engineering;
- coordinate the work of staff to help those from different centres to work together to jointly plan and integrate learning between the PEO and the NC and HN engineering elements;
- improve poor internet connectivity and reliability of ICT equipment and develop staff knowledge of the resources on the VLE;
- continue to improve feedback mechanisms for apprentices to demonstrate the effectiveness of learner engagement processes and the role of apprentices in generating continual improvements;
- continue to develop self-evaluation arrangements so they provide opportunities to fully engage employers in the evaluation of MA programmes; and
- ensure that self-evaluation arrangements are systematic and link effectively to action planning to improve and enhance the quality of delivery.

Education Scotland should:

- continue to monitor and review progress of colleges on achieving these recommendations through on-going engagement and review activities;
- work with providers, local authorities and schools to help focus their plans on achieving DYW strategies; and
- work with other post-16 educational sectors to inform them of the findings of this report and engage them in working towards delivery of these recommendations.

SDS should:

- continue to support providers to work with employers, local authorities, awarding bodies and other stakeholders to respond to the changing needs within the engineering industry sector;
- work with providers, local authorities and schools to help focus their plans on achieving DYW strategies; and
- monitor and review progress of independent training providers on achieving the recommendations within this report.

Appendix 1

Glossary of terms

AA	Associate Assessor
DYW	Developing the Young Workforce
EKGTA	East Kilbride Group Training Association
HMI	Her Majesty's Inspector
HNC	Higher National Certificate
HND	Higher National Diploma
ICT	Information and Communications Technology
ITP	Independent Training Providers
MA	Modern Apprenticeship
NC	National Certificate
OGAS	Oil and Gas Academy for Scotland
PEO	Performing Engineering Operations
ROA	Regional Outcome Agreements
SDS	Skills Development Scotland
SECTT	Scottish Electrical Charitable Training Trust
SEMTA	Science, Engineering, Manufacturing and Technology Alliance
SFC	Scottish Funding Council
SMART	Specific, Measureable, Achievable, Realistic and Time-Bound
SSCs	Sector Skills Council
SSOs	Sector Skills Organisations
STEM	Science, Technology, Engineering and Mathematics
SVQ	Scottish Vocational Qualification
UKCES	UK Commission for Employment and Skills
VLE	Virtual Learning Environment

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