



Designing apprenticeships for success

A discussion document on
Engineering Degree Apprenticeships



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Foreword

Professor Mike Sutcliffe



The profound shortage in the engineering skills pipeline is well documented and so the EPC enthusiastically welcomes the development and promotion of degree apprenticeships. The whole engineering sector shares the hope that degree apprenticeships will prove a significant channel for tomorrow's engineers to gain the skills, qualifications, knowledge and experience they need and, in the process, that employers will uncover rich new seams of talent.

However much we greet the future with optimism, whenever there is innovation, we must also consider the risks. We should explore how we can design the degree apprenticeship system to help bring about the desired outcomes.

The Government has been keen to ensure degree apprenticeships are employer-led. The intention is to ensure they meet employers' needs. If they meet the needs of employers, then, the thinking goes, the needs of the apprentices and the wider economy will go hand in hand.

We understand that reasoning, but, however well intentioned, employers may be more concerned about ensuring apprentices are trained for a job, rather than for a career that may take the apprentice to other, perhaps rival, employers. Moreover, there is a reason that the design of programmes in higher engineering skills has traditionally been the preserve of our universities. As academics, we have decades, even centuries, of expertise in teaching and learning. In the honest desire to ensure the relevance of apprenticeships, we must not overlook what we have learnt about learning.

The EPC wants to encourage a closer examination of the difference between the success of degree apprenticeships that are 'employer-led' and the potential failure awaiting those that are 'employer-dominated'.

With this in mind, this paper builds on the Engineering Professors' Council's extensive work, led by Professor Simon Hodgson of Teesside University, establishing a toolkit for academics to develop successful degree apprenticeships. Designing apprenticeships for success is intended as a 'green paper' highlighting for discussion issues that concern the academic community about degree apprenticeships.

There is a wide range of issues and many have, we are aware, been overlooked, but we have tried to group key points into five main themes: the experience and outcomes of the apprentice themselves; collaboration between higher education institutions and employers; accreditation and assessment;



funding; and achieving parity of esteem between degree apprenticeships and traditional engineering degree programmes.

Where possible, we have offered proposals to address the issues raised, but we hope that these will prompt discussion rather than be regarded as territorial markers that we attempt to defend.

As engineers we work most effectively when we work together to design beautiful solutions. With this paper, we hope to start a process.

I would like to express profound thanks to the members of the Degree Apprenticeship Working Group who have so kindly given their time and enthusiasm to this exercise and in particular to the Engineering Council, the Royal Academy of Engineering and the Institution of Engineering and Technology for their support and involvement in the Working Group. I must also thank the Executive of the EPC, particularly Dr Inês Direito and Johnny Rich, for all their hard work.

Professor Mike Sutcliffe
Chair of the Engineering Professors' Council Degree Apprenticeships Working Group

Contributions

The Engineering Professors' Council Degree Apprenticeships working group was created under the Engineering Education, Employability and Skills Committee (EEES), aiming to explore best practice and barriers to HEIs delivering degree apprenticeships in engineering: informing Government, employers and the Institute for Apprenticeships & Technical Education from a provider perspective.

Working Group Membership

Mike Sutcliffe, Kingston University London (Chair)
John Beattie, Institution of Engineering and Technology
Mike Bramhall, Sheffield Hallam University
Inês Direito, Engineering Professors' Council
Catherine Elliott, Engineering Council
Charlotte Freeman, Royal Academy of Engineering
Georgina Harris, Manchester Metropolitan University
Simon Hodgson, Teesside University
Henri Huijberts, Queen Mary University of London
John Lockey, Newcastle University
Jane Reid, Queen Mary University of London
Johnny Rich, Engineering Professors' Council

With thanks to

Patricia Behal and Ana Doncic (Engineering Council); Dan Canty (IET); Claire Donovan, Rhys Morgan and Philip Greenish (RAEng); Vicky Elston (EPC).

Introduction



The Government reforms of apprenticeships and technical education have given employers a core role in specifying the knowledge and skills an individual needs to perform well in a certain occupation.

There are currently 160 apprenticeship standards approved for engineering, at all levels (as of 9 June 2017¹). Although it is too early to say what the level of demand for degree apprenticeships (levels 6 and 7) in engineering will be, with just 14 standards developed by trailblazer groups, other early indications suggest it could be substantial. Large engineering companies, such as Siemens, are already involved in discussions with universities about developing apprenticeships at level 8 (doctorate level).

Following the recent election, the commitment to apprenticeships remains strong across all political parties. The introduction of the apprenticeship levy will also drive employer demand and interest in apprenticeships. Providing progression pathways to enable individuals to progress from technical apprenticeships to higher and degree apprenticeships remains important. Apprenticeships have become a long-term component of the education and skills policy, not a short-term initiative.

This report highlights issues that the EPC, and the wider engineering higher education sector believe require further consideration as a first step to developing a good practice guide to support policy-making in this area. The focus is on how to streamline the process of developing engineering degree apprenticeships, ensuring the quality of the apprentices' learning experience and the most effective integration of the practical and academic elements of the apprenticeship.

Designing apprenticeships for success addressed five main areas that the EPC considers to be core to successful degree apprenticeships: apprentices' experience and outcomes; collaboration between HEIs and employers; accreditation and assessment; funding; and parity of esteem.

¹ findapprenticeshiptraining.sfa.bis.gov.uk/Apprenticeship/SearchResults?Keywords=engineering

Executive Summary



This paper seeks to put apprentices' needs at the heart of the development of degree apprenticeships:

- Apprentices' wider learning experience must be positive and fulfilling.
- The outcomes for apprentices should be measurable and should result in them achieving career advancement, enhanced employability and progression towards professional recognition.
- The fact that degree apprenticeships are employer-led should not create an incentive to train apprentices for a job but rather for a career.
- Graduates who have gained their degree through an apprenticeship route should be felt or be seen as in any way lesser than those who have graduated through a standalone degree, indeed the additional career experience they will have acquired should, if anything, give them a higher status.
- Consideration must be given to the fact that degree apprenticeships are likely to attract individuals from groups underrepresented elsewhere in higher education.

In the development of this paper, the EPC has consulted a range of stakeholders including academics, employers and engineering professional bodies.

Feedback suggests industry would like:

- Accredited courses (or equivalent).
- Flexible 'hop-on-hop-off' programme structures to enable the banking of units and AHEP3 LOs and experiential competences.
- Highly specialist modules that are delivered by industry.
- Employer consortia sharing specialised training centres.
- Progression through the levels of engineering: ensuring that apprentices engaging with a module have covered the necessary material (or prerequisites).
- Dual award (both the degree and apprenticeship are awarded at the conclusion of the course) and parity of esteem with regular degrees.
- Quality of provision and maintenance of high standards.
- Flexible delivery modes.

In addition, concern was expressed that many companies do not have the capacity to deliver the education and training that is needed for an accredited programme with the apprentice numbers that they would like (especially smaller companies).

Executive Summary



On the other hand, higher education institutions are concerned about:

- Completion rates: Although there is no data yet on degree apprenticeships success metrics, DfE² has released data suggesting that one in three apprentices failed to complete their apprenticeship programme in 2015-16.
- Cost of provision: The sector is worried that the costs of delivering a degree apprenticeship could be higher than the available funding, particularly given that 20% of the fee is retained by government until the final assessment stage. HEIs are also concerned about the additional costs of coordination and communication with multiple employers.
- Apprentices, especially the first cohort of new apprenticeships, need to be reassured that their degree, if not already accredited, will be considered for accreditation.

The paper addresses these issues through five themes: apprentice's experience and outcomes; collaboration between HEIs and employers; accreditation and assessment; funding; and parity of esteem. Among the suggestions raised are:

- Employers and HEIs need to give deeper consideration to the framework of pastoral support that will be necessary to support degree apprentices
- While degree apprenticeships may involve complex relationship-building between business and HEIs, such closer collaboration is likely to have benefits not only for the apprentices, but may also establish a wider framework for working together.
- Any currently accredited programmes should be used as a base to build-up a degree apprenticeship (noting the importance of securing accreditation for any new delivery mode).
- A pedagogical framework should support specialised employer-based education or training (either led by the employer or supported/guided by academia).
- A national map of specialist training centres and facilities should be produced.
- Careers education is woefully inadequate in schools and needs to be addressed in order to ensure that school-leavers are attracted to degree apprenticeships and understand whether they are suitable for individuals. This is particularly important in establishing a new model of training.

Discussion themes



Over the next pages, we present some deliberations on the following themes. The text highlights a various proposals for further discussion and questions to be considered and others have been drawn out at the end of each theme.

Apprentices' experience and outcomes

The educational and lifelong needs of apprentices must be paramount in the design of apprenticeships that work for employers.

Collaboration between HEIs and Employers

Providers and employers must work more collaboratively to better develop, deliver and assess engineering degree apprenticeships.

Accreditation and Assessment

A common, yet flexible, framework for engineering must be developed.

Funding

Degree apprenticeships must be sustainable at medium and long term.

Parity of esteem

Policies must be developed to tackle social pre-conceptions of quality and value of different routes of qualification.

Apprentices' experience and outcomes



Apprenticeships that do not provide the apprentice with a positive learning experience and outcomes are doomed to fail. Apprentices need to acquire useful and relevant skills and knowledge that prepare them well for a whole career in engineering, rather than simply a job. If they don't, they will underperform and it will become difficult to attract new apprentices and secure the future skills supply. How do we design an experience that delivers?

On the face of it, for an individual, a degree apprenticeship offers the best of all worlds – the opportunity to 'earn while you learn' and gain a degree while progressing on the journey to Incorporated Engineer (IEng, level 6) or Chartered Engineer (CEng, level 7) registration. On successful completion of an apprenticeship, an individual will have the knowledge, skills and behaviours as defined by employers required for a specific occupation. A degree apprenticeship provides a 'new offer' for prospective students and all of this is possible without the usual debt burden of higher education.

Employers play a major role in degree apprenticeships, by improving the quality of apprenticeships and making sure their employees are fully competent to do the job and meet the needs of their businesses. However, the success of an apprenticeship will depend heavily on the apprentice's engagement and achievements.

A holistic approach to apprentices as students as well as employees, and hence to their 'student experience', is a key component of education and has a huge impact on learning outcomes. It considers and supports the apprentice's prior experience and knowledge, the learning context and their perception of it, their approach to learning, and learning outcomes. This is a vital and necessary component of quality degree apprenticeships.

Terminology

A person enrolled on a degree apprenticeship is both an 'apprentice', and a 'student', engaged in both work-based learning and academic learning. Their behaviour and achievements reflect the company they are working for, and will have an impact on their progression within the same company. So, in one sense, this person is an employee, but what differentiates them from others is that they are a 'learner' who combines on-the-job training and also university level academic study.

Apprentices' experience and outcomes

The word 'apprentice' is commonly understood to mean many different things – not all of them are aspirational. Naming someone enrolled in a degree apprenticeship as an 'apprentice' could have a negative impact on people's understanding of the programme. It can also lead to a competitive disadvantage with regular degrees, as there is, still, a strong connotation of 'apprenticeship' as learning a trade for a fixed period at low wages.

Although many employers seem to understand the full scope of a degree apprenticeship, there is a general sense that students, parents, and school advisors, may not have enough knowledge of what it entails. **Is this a matter of changing the terminology, or perhaps undertaking the more challenging task of reclaiming the term 'apprentice'?**

Degree apprenticeships are targeting a more heterogeneous cohort of apprentices. **What knowledge, understanding and expectations do different groups of prospective apprentices have towards degree apprenticeships? Do 30-40 year-olds aspire to be an 'apprentice'?**

Is the term 'degree apprentice' clear enough to avoid conflation with lower levels of apprenticeships? Would renaming 'student' and 'apprentice' as 'learner' help different publics (secondary school students, parents, mature students, employees, employers and the wider society) to have a clearer understanding of what a degree apprenticeship delivers and entails? And would it contribute to the recognition of degree apprenticeships as a highly prestigious route into the engineering profession?

Given the widespread use of the current terminology, whether right or wrong, it may be fruitless to hope to challenge it. However, by raising issues around terminology, we hope to influence thinking about the promotion of degree apprenticeship and reframe perceptions.

Ongoing monitoring of apprentices' experience

The Institute for Apprenticeships is working on establishing mechanisms to engage apprentices, through an 'Apprenticeship Panel', which reports to the Board. It is also planning to use outcomes metrics to influence provision and evaluate the quality of the apprenticeship programme, such as wage returns and destination data.

These mechanisms are useful to capture an overview of the impact that a degree apprenticeship has on learners, employers and the wider economy. However, they do not necessarily reflect an individual apprentice's experience while engaged in degree apprenticeships. From the apprentice's perspective, their satisfaction with their experience might be seen as a better driver of quality enhancement (as, it is argued, the National Student Survey has been in higher education).

Satisfaction, however, may not go far enough as it is a function of the apprentice's expectations as much as their objective experience. Research suggests that engagement is more accurately correlated with learning gain. The Higher Education Academy already operates the well-established UK Engagement Survey (as a tool for quality enhancement) which might serve as a model, and HEFCE is currently funding a number of projects to explore other methods to measure learning gain directly.

Apprentices' experience and outcomes

Although the marketing of apprenticeships often targets school leavers, it is expected that more mature individuals wanting to progress in their careers would be enrolled in this mode of study, particularly existing employees. In addition to this heterogeneity of backgrounds, participation modes are also diverse. Degree apprentices are not the same as 'on-campus students' nor 'part-time students'. This might impose a challenge to the development of a sense of belonging which is so important to the success of students, and in particular for participants from non-traditional backgrounds.

A sense of belonging with a clear cohort identity could be developed by supporting apprentices to become active students; providing them with time and opportunities to engage in co-curricular experiences; offering tailored pastoral support and providing access to non-academic resources, such as child care; ensuring their representation in student unions in respect of their academic activities and by trades unions in their employment. Based on research in the context of traditional students, by supporting apprentices' broader experience, HEIs might help to mitigate drop-out due to non-learning reasons.

Nevertheless, this may not be productive, it may be that a sense of belonging to their place of student is neither valued by nor valuable to apprentices. Rather, their sense of belonging may sit with their employer. They may prefer to think of themselves as different from the students. However, given the research on the impact of belonging on learning, this in itself may create a barrier to their academic learning.

It may be that the effective balance is to create a new identity for apprentices as learners with a sense of belonging that sits with both their employer and their HEI. In any case, apprentices need to be reassured that their needs are met, in relation to learning, economic or pastoral issues. To ensure successful outcomes for both employers and apprentices, this must be embedded into the standard provision of all degree apprenticeships.

Outcomes

The desired outcome of a successful apprenticeship for the employer is that the apprentice should enter into their long-term employment in a productive way through a pathway that involves lower costs or better results than traditional forms of recruitment and training.

However, the wider economic and social measures of the success of apprenticeships will be the successful plugging of gaps in the supply of skills in engineering. Indeed, the general economic success of the engineering sector – and in turn the economy as a whole – may be an indirect indicator of the success of degree apprenticeships if programmes become a sufficiently significant contributor to recruitment.

For apprentices the desired outcome will be to have acquired skills, knowledge, qualifications and professional recognition that enables them to pursue fulfilling and rewarding careers. This may involve remaining as an employee for the firm that recruited them as an apprentice, but it should also allow them the autonomy to move to other employers, markets and territories.

Apprentices' experience and outcomes

For HEIs, a successful outcome will be the sustainable provision of education in a way that enriches the learning of the entire academic community, facilitating new links with industry and stimulating innovation.

The desired outcomes of these four different stakeholder groups overlap, but are not interchangeable and they are not always inherently aligned. For example, while an employer may measure success by the loyalty of its former apprentices, the apprentices may value their potential career mobility.

In developing measures of success, the Government and Institute for Apprenticeships must ensure these support degree apprenticeships that work for everyone. 'Employer-led' should not mean that their desired outcomes reign supreme and the metrics used – which are likely to be proxies for the actual outcomes – must be chosen with sufficient care to avoid incentivising 'gaming'.

These issues are reminiscent of some of the debates around other metrics in higher education, such as TEF and the National Student Survey (NSS). For the sake of parity between the degree elements of a degree apprenticeship and stand-alone degree programmes, it should be assumed that degree apprentices would be invited to respond to the NSS in the same way as any other student. Similarly, data relating to degree apprentices the destination, progression and satisfaction should be included in TEF assessments. However, given the markedly different mode of delivery, inclusion may skew overall results, particularly as the number of degree apprenticeship increases over time.

Nevertheless, if degree apprentices are not included in NSS and TEF, then what alternative mechanism should be put in place to monitor the satisfaction of apprentices and the quality of the teaching they experience?

Apprentices' experience and outcomes Discussion points

OTHER QUESTIONS

- What have we missed?
- What are the priorities in this area?
- What are the immediate actions that can be accomplished?

Training providers

- Are the current induction programmes transferable to degree apprentices? Do they focus on different learning expectations, assess existing skills and address individual needs? Would intensive face-to-face study at the start of the programme help to foster engagement and a sense of belonging within a HEI?
- Do degree apprentices have a clear cohort identity and how are they being represented at their institutions?
- What could training providers do to minimise the risk of drop-out and failure to progress?
- What mechanisms are already in place to gather relevant feedback on the learners' experience?
- What types of learner support need to be guaranteed by the training provider?

Employers

- Intensive face-to-face study by the training provider and at the start of the programme can be problematic for some employers. This is particularly relevant to new apprentices that have to settle in at their employer too. In this case, should degree apprentices start at the company before or after the degree starts?
- What should be in place to help apprentices to settle in at their employer?

Apprentices' experience and outcomes

Discussion points

OTHER QUESTIONS

General

- Is the term 'apprentice' helping to raise the profile of degree apprenticeships among prospective apprentices (whether 18+ or mature), parents, schools, and the wider society? Does it have negative implications for parity of esteem?
- Would a change of terminology help to raise awareness to the quality and value of an apprenticeship? Would the term 'learner' be better suited to describe what being an 'apprentice' entails? Does it resonate with all the stakeholders? Or, would it be more effective to target campaigning and marketing initiatives to the wider public?
- What metrics of success could – or should – the IfA and other stakeholders use to assess the effectiveness of degree apprenticeship programmes? Should measures of learner engagement, satisfaction and/or learning gain be included?
- Would dedicated induction programmes for apprentices with different backgrounds, work experience and expectations, promote a better engagement and learning experience and reflect diversity of provision?
- In the longer term, would it be feasible to consider mentoring from previous degree apprentices, especially in large companies and in particular to develop and replicate models of existing good practice of mentoring and support?
- What is the state of welfare provision at the institutions, and companies, delivering degree apprenticeships?
- Since the answer to this question varies so much between organisations, it is perhaps better to build models of good practice and establish guidelines regarding minimum provision?
- How clear are the expectations of support to apprentices, employers and HEIs?
- How could SMEs that might not have enough resources to offer this type of support be better supported?
- Should these expectations be clarified in a partnership agreement, so that all parties involved are aware of the available mechanisms at both HEIs and companies?
- Should the EPC lead a project to develop a template agreement?
- Should degree apprentices be responding to the National Students Survey, or to a separate system?
- Should degree apprenticeships be included in TEF assessment data or are they likely to skew results one way or another? If they should not be included, how should we monitor teaching standards?

Collaboration between HEIs and employers

The relationship between higher education institutions (as training providers) and employers is critical to developing and running successful degree apprenticeships. The history of partnership between business and education is littered with good intentions and clashing cultures. How should we rewrite the rules of engagement?

The EPC recognises the benefits of degree apprenticeship being *employer-led*, but is alert to the danger of them being *employer-dominated*. For the benefit of learners, there should be a symbiotic and co-creative partnership between employers and HEIs with a clear and recognised shared ownership.

To promote this, responsibility lies as much with HEIs to engage with employers and the development of degree apprenticeship standards as early as possible as it does with employers to consult HEIs.

Although HEIs will engage in degree apprenticeships mainly as training providers, their role should be more than a mere contract supplier. The input the EPC has had from employers suggests most would welcome and expect a more collaborative approach.

Partnership

Employers are diverse, not just in size and capacity to support apprentices, but also in their attitudes towards wider partnerships with HEIs:

- Some employers want to be actively engaged with HEIs, for example, by joining advisory boards.
- Some employers want to know what is happening (e.g. updates on staff progress), but leave curriculum design and delivery to education providers.
- Some employers want to pay their fee (or preferably, no fee at all) and let their staff have time to attend an education provider (or better still have attendance outside work hours).

Whilst the first attitude suggests a stronger commitment to get involved in teaching and research policies, the other two suggest a weaker engagement with HEIs.

HEIs are specialised in teaching and mentoring the academic aspects of a profession, but not necessarily in engaging with companies to provide real-life examples and instances of best practice.

Collaboration between HEIs and employers

Therefore the EPC anticipates the need to support effective partnerships between HEIs and employers to better provide a holistic work-based learning experience to their apprentices, as we recognise that:

- Industry specialists are not necessarily good teachers/mentors/tutors. SMEs in particular are less likely to have the human resources to deliver degree apprenticeships and mentoring.
- HEIs would benefit from stronger partnerships with industry to deliver realistic training on professional practices.

It has been discussed that HEIs are not only delivering the academic component of a degree apprenticeship, but also managing the relationship with a wide range of individual employers, which implies extra costs not included in the allocated funding.

We support the work of Group Training Associations³ which provide a mechanism for managing apprenticeships on behalf of sectors, providing the benefits of scale to SMEs in particular. These and other consortia of employers can help reduce these costs and, whenever possible, provide the best resources for learners. For example, **would it be possible to establish wider shared apprenticeship schemes, where apprentices could go to different organisations, mixing and matching employers or training providers in the same geographic region?**

Protocols of collaboration

The Institute for Apprenticeships is supporting trailblazer groups through a team of relationship managers who guide the group through the development process. In addition, the Institute developed a 'getting started' support package for employers at the pre-proposal stage⁴. **It may be helpful if IfA also develops support documentation for HEIs and other training providers and extends the role of the relationship manager to support the role of HEIs in degree apprenticeships.**

A clear definition of roles and agreed patterns of communication are essential to a good partnership. The Engineering Gateways website⁵ provides useful resources such as template agreements between employers and HEIs.

Management of learning experience

It is essential that employers have mechanisms in place to fulfil the needs of the apprentices in the workplace. **The apprentices' experience would benefit from the support of a personal/pastoral professional development manager, not necessarily their line manager, to support their learning experience.** This person would be responsible for monitoring the needs of the learner in the workplace and liaising with the training provider for that same learner.

It would be helpful to the apprentice if this professional development manager already held professional registration if the apprentice themselves aspires to being registered themselves. The professional development manager might therefore be independent of the employer – particularly where the apprentice is employed in a smaller firm with a more limited human resource. Employers may gain from someone who is able to provide guidance and myth-busting advice about how best to engage with work-based learning and apprenticeships.

Collaboration between HEIs and employers

Good continuous professional development also needs to be available to facilitate HE staff to better support and assess learners engaged in work-based learning at their companies, who may or may not have prior experience of work- or HE-based learning and assessment.

Bringing more engineering professionals from industry to teach in universities might help to address such issues. Similarly collaborative research projects might offer opportunities for a productive free-flow between industry and HE institutions.

It would be important to include not just the professional development managers but also the line/task managers in discussions with training providers, so that HEI staff get a better idea of the individual apprentice's work constraints and so that the line/task managers gets a better idea of the academic constraints.

Assessment plans

HEIs' experience and expertise may be invaluable to help developing assessment plans. This will depend on the kinds of assessment undertaken. Employers may find that the formal learning demands of a degree apprenticeship lend themselves to the kinds of assessment that are standard in HEIs rather than more objective-based assessment that are more common in industry.

Apprentices need to combine academic studies with reflection on how they relate to issues in the workplace, including their own personal practices and behaviours. This approach helps them to develop their understanding of the role of an engineer in the workplace and the wider community, and will develop their capacity to contribute more effectively and confidently in the workplace. Ongoing assessment tasks in degree programmes need to support this process.

Employers and HEIs need to support apprentices in their learning and personal and professional development. **Ideally, employers need to put in place and develop 'workplace mentors' and HEIs need to provide 'academic mentors' to work in tri-partite collaboration with the apprentice to ensure they are fully supported during their programme up to their end-point assessment.** This will enable apprentices to embark on a learning programme designed to enhance their employability through developing their existing role or future aspiring role for a career in engineering. Their work-based learning needs to be supported to help them reflect within their assessment tasks on existing practice, applying concepts learned on the degree apprenticeship programme.

OTHER PROPOSALS

Institute for Apprenticeships

- The IfA should assist HEIs' in their understanding of the bureaucratic process, and provide help in setting up the contract at the beginning of the delivery – developing 'how to' guides to training providers?

³ www.gta-england.co.uk

⁴ www.gov.uk/government/uploads/system/uploads/attachment_data/file/609912/How_to_guide_for_trailblazers_.pdf

⁵ www.engineeringgateways.co.uk

Collaboration between HEIs and employers

Discussion points

OTHER PROPOSALS

Training providers

- Develop and deliver CPD programmes focusing on professional practice to support teaching staff and mentors.

Both Government and the Institute for Apprenticeship

- Consider extending shared apprenticeship schemes, supported by geographical consortia and/or Group Training Associations.

OTHER QUESTIONS

- What have we missed?
- What are the priorities in this area?
- What are the immediate actions that can be accomplished?

Employers

- How realistic would it be for each apprentice to have a professional development manager? How would this person be allocated?
- How can firms be encouraged to employ more academics to develop research projects within companies?

Training providers

- How can HEIs be encouraged to bring in more engineering professionals to teach? Would this be desirable? As well or instead, how should HEIs go about attracting teaching staff with practical experience?

Accreditation and assessment

If apprenticeships do not result in competent and qualified engineers who are able to demonstrate their professionalism according to the framework of recognised sector standards, then they will have failed. They will not have met employers' needs and they will have betrayed the aspirations of the apprentices themselves. How can we ensure apprenticeships have a rigorous system of assessment and recognition that is aligned to professional progression?

Links to UK-SPEC

The UK Standard for Professional Engineering Competence (UK-SPEC)⁶ sets out the competence and commitment required for professional registration⁷ as an Engineering Technician (EngTech), Incorporated Engineer (IEng) or Chartered Engineer (CEng). It also includes examples of activities that demonstrate the required competence and commitment. The requirements for the Accreditation of Higher Education Programmes (AHEP)⁸ in engineering are set out in line with UK-SPEC. AHEP sets out the standard for degree accreditation. It also outlines the purpose and application process for universities that wish to secure or maintain accreditation of their programmes. The Approval of Qualifications and Apprenticeships Handbook (AQAH)⁹ describes the approval process and required output standards for the purpose of technician registration (EngTech or ICTTech).

The Engineering Council has not yet specified a process (or processes) for formal recognition of higher apprenticeships and degree apprenticeships, although such apprenticeships may contain accredited degrees and/or provide evidence of competence that can be considered by professional engineering institutions as part of the review process when individuals are considered for professional registration.

At the time of writing, published engineering degree apprenticeship standards¹⁰ have some flexibility regarding the degree that is included. Existing degrees that are accredited by one or more licensed professional engineering institution on behalf of the Engineering Council may be included within degree apprenticeships. If a new mode of delivery is introduced, learners who study through that mode of delivery will have an accredited degree only if the university secures professional engineering institution accreditation for the new delivery mode. Universities may seek accreditation of new degrees to be included within degree apprenticeships. AHEP sets out current requirements for degree accreditation.

⁶ www.engc.org.uk/ukspec

⁷ www.engc.org.uk/professional-registration

⁸ www.engc.org.uk/ahep

⁹ www.engc.org.uk/standards-guidance/standards/approval-of-qualifications-and-apprenticeships-handbook-aqah/

¹⁰ www.gov.uk/government/collections/apprenticeship-standards

Accreditation and assessment

The Engineering Council and professional engineering institutions recognise that the introduction of degree apprenticeships presents both opportunities and challenges in terms of professional recognition, including that:

- degree apprenticeships may provide an opportunity for learners to demonstrate some or all of the competences required for professional registration alongside the development of knowledge and understanding;
- there may be challenges in demonstrating that all learners on a work-based degree will be assessed against all AHEP learning outcomes, particularly if the degree is designed with a significant level of flexibility to adapt to employer needs.

Professional recognition of degree apprenticeships and higher apprenticeships is being discussed by the Engineering Council and other stakeholders and will be given significant consideration in the upcoming review of Engineering Council regulations, guidance and standards.

Universities and employer groups are encouraged to speak to professional engineering institutions early if they are considering developing a new engineering degree or a degree apprenticeship.

Professional recognition

The Institute for Apprenticeships recommends that apprenticeship standards should align with professional registration, where it applies. More specifically, degree apprenticeships (level 6 and 7) should align, as much as possible, with the requirements for professional registration, “[...] the standard should set out the additional experience that is required before an individual can acquire professional status”¹¹. This is particularly relevant to engineering.

In some circumstances degree apprenticeships may result in immediate IEng or CEng registration. In many cases degree apprenticeships will provide knowledge and understanding and some of the competences required for registration. The apprenticeship standard, opportunities to demonstrate competences in the work place, aspirations of the individual and experience of the individual prior to commencement of a degree apprenticeship, are all likely to impact on how far a degree apprenticeship takes an individual on their journey towards professional registration.

- Accreditation of a degree within a degree apprenticeship only confirms only that that degree provides the underpinning knowledge and understanding required for that accreditation. **Would universities, individuals and employers welcome an extension to current Engineering Council and professional engineering institution recognition processes to more formally recognise competences developed and assessed through Degree Apprenticeships?**
- **Should accreditation of degrees within degree apprenticeships (bearing in mind some of these degrees may be separately delivered outside of degree apprenticeships) and recognition of competence gained through work based aspects of a degree apprenticeship be kept separate or combined?**

¹¹ *Strategic Guidance*, p.17, www.gov.uk/government/publications/institute-for-apprenticeships-strategic-guidance-2017-to-2018

Accreditation and assessment

Assessment

Assessment of knowledge, skills and behaviours is conducted through a holistic end-point assessment (EPA). EPA could be integrated into degree programmes and provided by the higher education provider. Otherwise, non-integrated EPA must be conducted by a separate apprentice assessment organisation.

Integrated degree apprenticeships	Non-integrated degree apprenticeships
Programme co-designed by employers, HEIs and professional bodies to create an apprenticeship that delivers and tests both academic learning and on-the-job training.	Existing degree programmes used to deliver the academic knowledge requirements of an occupation and additional training.
End-point assessment <ul style="list-style-type: none"> ● no need for a separate test of occupational competence ● the same HEI could both deliver the training and assessment 	End-point assessment <ul style="list-style-type: none"> ● separate test of full occupational competence and the end of the apprenticeship

Figure 1. End-point assessment in integrated and non-integrated degree apprenticeships

QAA has recently published new guidance on ‘Quality Assuring Higher Education in Apprenticeships’¹², describing “how expectations relating to the quality assurance of higher education, as set out in the UK Quality Code for Higher Education, accommodate and apply to existing and emerging UK models of apprenticeships involving higher education qualifications at undergraduate and postgraduate level”.

The Institute for Apprenticeships also recommends that, where applicable, assessment should support professional body recognition, “where a professional body or bodies have recognised the standard [...] they will also recognise the assessment process, as completion of the apprenticeship should ensure the apprentice is ready to secure professional accreditation”¹³.

However, IfA also acknowledges that at levels 6 and 7 it may not always be possible for a standard to align fully with the requirements for professional recognition. In addition, Professional Engineering Institutions and employer consortia have different models in terms of the relationship between end-point assessment and professional review (the process of assessing someone for an IEng or CEng professional title), with many acknowledging that not every candidate will have the opportunity to demonstrate all the competence specified in UK-SPEC (particularly in terms of management). There are other arguments for not linking EPA and the professional review including that individuals must join a professional engineering institution (for which there is a fee) before completing their professional review.

¹² www.qaa.ac.uk/en/Publications/Documents/Quality-assuring-higher-education-in-apprenticeships-2017.pdf

¹³ *Strategic Guidance*, p.19, www.gov.uk/government/publications/institute-for-apprenticeships-strategic-guidance-2017-to-2018

Accreditation and assessment

EPA and continuous assessment

Apprentices should be provided with the tools to be able to monitor their own progress – which skills are they developing, and by doing what, combined with reflection skills (self-aware learning). One of the roles of the HEIs should be supporting individuals to record their learning process and evidence towards achievement.

Workplace learning and university learning should have different contexts of assessment. All partners (learner, employers, training providers) need to know what are the required learning outcomes of the degree apprenticeship (knowledge, skills and behaviours) for both on-the-job and off-the-job training, to be able to monitor progression towards desired achievements.

A reflective portfolio, owned by apprentices, would facilitate continuous assessment and feedback. A longer period of work and training would benefit from this continuous exercise by increasing learners' awareness of their work and learning relevance to their employer and job market.

In building up such a portfolio, wider skills such as team working and communication should be assessed, which raises an important question: how might – or should – this be done?

Modules to build-up into a degree (knowledge and experiential bricks)

- Would HEIs and other training providers (including employers) want to develop and deliver individual specialist modules that could be included in degrees awarded by other HEIs?
- Would HEIs want to award degrees that include modules delivered elsewhere?
- Would individuals and their employers want to be able to select modules for inclusion in their degree from providers other than the awarding HEI?

We have concerns about the potentially low number of teaching contact hours that apprentices are likely to have. We need to be realistic about what could be achieved in a degree apprenticeship of normally no longer than six years. Existing degree apprentices have reported to us what they perceive as the strong benefits of a good number of contact hours. The focus must be on high-quality delivery and development of skills in order to enable apprentices to progress.

Progression

Engineering has a core theoretical background that should be learned and assessed regardless of the occupation targeted by a specific Apprenticeship Standard. The UK Standard for Professional Engineering Competence (UK-SPEC) specifies competences required for registration as a Chartered Engineering, Incorporated Engineering or Engineering Technician. This is particularly relevant to progression routes and bridging the gap between technical and academic aspects of the profession.

It is also important when considering a framework for failure or drop-out. What, for example, should be the opportunities to retake for an apprentice that fails an assessment as part of their degree apprenticeship? While this should be determined by the assessment strategy in the apprenticeship

Accreditation and assessment

standard, is this an area where the wider considerations of the academic community and of apprentices themselves should be taken into greater account?

Moreover, should an apprentice that drops out of an apprenticeship before the end be able to transfer any credit to a different apprenticeship, a degree or some other programme? This is an issue that most likely falls outside the scope of any apprenticeship standard.

OTHER PROPOSALS

Institute for Apprenticeships

- Engineering standards to be assessed by engineers and experts in the field – panels need to be representative.

Employers

- Reflective learning statements (reflective portfolio) to be implemented, to facilitate meaningful learning through work.

OTHER QUESTIONS

- What have we missed?
- What are the priorities in this area?
- What are the immediate actions that can be accomplished?
- What happens if an apprentice wishes to progress from a level 6 Degree Apprenticeship to an academic masters degree? How can/will HEIs ensure that masters degrees are accessible to individuals who want to complete them while in employment, whether as part of a further Degree Apprenticeships or as a stand-alone qualification?
- What mechanisms should be in place to support apprentices who want/need to drop out and then return (and/or switch employer including following redundancy)?

Funding

The tuition cost of offering a degree in engineering typically outstrips the funding available and they are cross-subsidised in universities by other degree programmes, international student fees or research funding. The apprenticeship levy funding is set at an even lower level and yet the same high standards will be expected. Meanwhile, there will be the additional costs of managing external relationships. How then can we make degree apprenticeships financially sustainable: by cutting costs or increasing the funding available?

Real costs of delivery

The maximum levy funding for a degree apprenticeship is £27k, which no longer matches what an English university currently receives for teaching a three-year full-time degree. Moreover, the amount the HEI training provider receives has to include the costs of end-point assessment, which may be separate to the degree.

Degree apprenticeships also carry a high burden of communication and collaboration and are a very different paradigm to campus degrees. To do them properly, they need proper resourcing and dedicated staff at the HEI.

Furthermore, unlike stand-alone degrees which are funded upfront, degree apprenticeships carry a greater financial risk for HEIs. **How would HEIs cope with up to 20% of funding being held back if an apprentice does not pass their end-point assessment (EPA) or this is delayed?**

In the medium and long-term, HEIs would either need more financial support to deliver high-quality degree apprenticeships or they would have to be developed to ensure a significantly lower tuition cost per student than the costs associated with stand-alone degree programmes.

Potential savings

It may be argued that HEIs are being asked to do far less in teaching the degree component of a degree apprenticeship than when teaching stand-alone degrees. If that is the case, it should be possible to lower costs.

For example, apprentices will have access to workplace facilities and so are likely to need fewer materials and amenities provided by the HEI. They will also have access to industrial expertise and are likely to need less contact time and academic support than traditional students.

Moreover, the role of employers in degree apprenticeships may lower the costs of designing the curriculum and employers may deliver some of the teaching.

There may even be financial gains for HEIs in developing close relationships with employers in terms of other partnerships in research, knowledge exchange or training contracts.

What are the potential pros and cons of plans for charging employers more than the levy would support?

Learners enrolled in degree apprenticeships in engineering are working, very often, in financially valuable projects to their companies, and it may be that, over time, those who have completed degree apprenticeships may tend to stay longer in the company than other graduates. Employers might, then, be willing to re-invest in their training. This includes employers who have previously invested in lower level apprenticeships who may be particularly enthusiastic to use degree apprenticeships to as a means to further upskill some of their former apprentices.

Unspent levy

Should employers be permitted to use unspent levy through their supply chain?

As in-house support is on the top of the fee and an apprentice should be 80% of the time on-the-job, would employers be interested in contracting HEIs to offer pastoral support and mentoring; help to assess broader skills; continuous professional development in pedagogy for in-house mentors?

Funding

Discussion points



QUESTIONS

- What have we missed?
- What are the priorities in this area?
- What are the immediate actions that can be accomplished?
- How can HEIs best engage and support SMEs that do not pay the levy and do not have the resources that large companies have? (e.g. placements support, mentoring)
- Is the true tuition cost of a degree apprenticeship likely to be higher or lower than a stand-alone degree?
- Should the EPC lobby the Government to link levy funding for degree apprenticeships to student tuition fees? If so, at an equivalent rate, a lower rate or a higher rate?

Employers

- Should there be additional funding for degree apprenticeships by employers to guarantee long-term sustainability of delivery?
- Would employers be willing to provide such additional funding?
- Would employers be interested in contracting HEIs to offer pastoral support and mentoring; help to assess broader skills; continuous professional development in pedagogy for in-house mentors?

HEIs

- What action could HEIs take – or should they be willing to consider – to ensure additional funding for degree apprenticeships by employers?

Parity of esteem



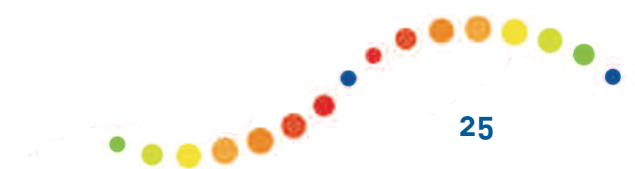
Over many decades, various innovations in technical and vocational education have been undermined by a suspicion that more traditional academic pathways attract the most able students and produce better workers. How do we ensure that those who have gained their skills through degree apprenticeships are regarded with equal – or even greater – esteem as those with more stand-alone engineering degrees?

Very often, technical education is promoted as second best to academic. For degree apprenticeships to succeed, they need to be recognised as a highly distinguished route to the engineering profession, and seen as at least equally prestigious to the academic route. Consideration may be given to how degree apprenticeships may in time be recognised as not just equal to a degree, but providing more than a degree – ‘a degree plus’ – as it combines knowledge and understanding from a degree with workplace knowledge and competences.

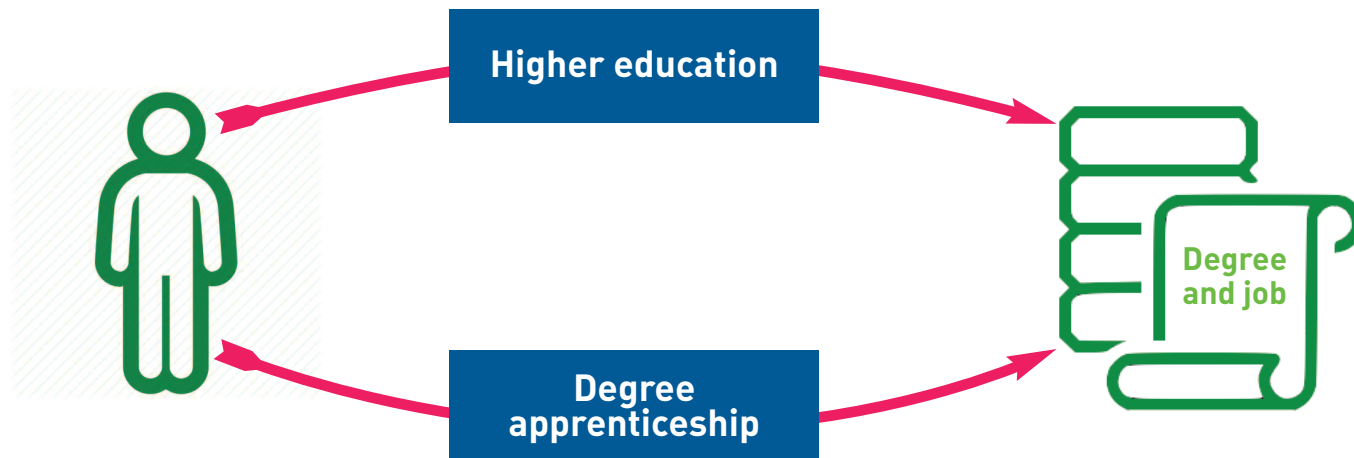
School outreach

There is a lack of careers advisors in schools, and teachers are not well informed about routes they themselves did not take, let alone ones that were not even available to them. This means they are often unprepared and unsuitable to deliver competent career information, advice and guidance.

Developing regular sustainable information and advice initiatives can help to reach students and their families. **Engagement with schools needs to start as young as possible with the idea of apprenticeship presented constantly as a means to leave full-time education at any stage (after compulsory schooling) while continuing to study in a paid, working environment.** To ensure the message of parity is clear, stress should be placed on the same standard of qualifications being achieved while also acquiring practical work experience.



Parity of esteem



Career advice

Degree apprenticeships are a vehicle to employability and registration as an Incorporated or Chartered Engineer. Both degrees within degree apprenticeships and stand-alone degrees may be accredited for professional registration purposes.

Careers advisors need to understand that both routes are equally valuable and prestigious. It would also be useful to promote careers advice that encourages individuals to look for an accredited degree¹⁴.

A change in career guidance policies would benefit from a clear terminology.

¹⁴ www.engc.org.uk/acad

Parity of esteem Discussion points

PROPOSALS

Department for Education

- Prioritise impartial careers advice.
- Investment in the recruitment and training of career advisors.
- Require that, as part of their statutory duty to provide careers education, schools should retain the services of a registered careers practitioner, such that each pupil receives at least one hour per term of careers guidance throughout secondary education.
- Provide CPD for teachers, on education routes and engineering careers.
- In the long-term – delivery of more applied theory in schools. Students need to understand the relevance of what they are learning. More embedded practical activities.
- Allow employers to use part of the apprenticeship levy to expand careers education and schools outreach to support the apprenticeship pipeline on behalf of the sector.

Office for Students

- Support awareness campaigns with advice for career advisors, students in schools and parents.

QUESTIONS

- What have we missed?
- What are the priorities in this area?
- What are the immediate actions that can be accomplished?
- How else can parity of esteem be assured? What levers do the various stakeholders have at their disposal?

Glossary



AHEP: Accreditation of Higher Education Programmes
AQAH: Approval of Qualifications and Apprenticeships Handbook
CEng: Chartered Engineer
CPD: Continuous Professional Development
DA: Degree Apprenticeships
DfE: Department for Education
EngTech: Engineering Technician
EPA: End-point assessment
EPC: Engineering Professors' Council
HA: Higher Apprenticeships
HEI: Higher Education Institution
IEng: Incorporated Engineer
IfA: Institute for Apprenticeships
OfS: Office for Students
QAA: Quality Assurance Agency
SME(s): Small and Medium Enterprise(s)
UK-SPEC: UK Standard for Professional Engineering Competence

Notes



Notes





#EngineeringDA  @EngProfCouncil

PO Box 789 Godalming Surrey GU7 9FW

T: +44 (0)7786 176 028 ● E: info@epc.ac.uk ●  [@EngProfCouncil](https://twitter.com/EngProfCouncil) ● W: epc.ac.uk

Patrons:

Professor Lord Alec Broers FREng FRS Kt DL

Professor Julia King, the Baroness Brown of Cambridge DBE FREng

Sir John Parker GBE FREng Sir William Wakeham FREng Sir Peter Williams CBE FRS FREng

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