



**Engineering Professors
COUNCIL**

The voice of engineering academics

EXPERIENCE ENHANCED

Improving engineering degree apprenticeships

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#ExpEnhanced

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FOREWORD

IN the face of a shortage of engineering and technical skills, degree apprenticeships are emerging as an important feature of the education and training landscape and the Government's ambitions for their future are substantial. The Skills Minister the Rt Hon Anne Milton MP sees them as a challenge to university as the "default" post-school pathway¹ and her predecessor (and now Chair of the Education Select Committee) Robert Halfon MP has stated a wish to see 50% of students at university enrolled on degree apprenticeships.² There is similar commitment to the policy from all political parties.

Since the introduction of the Apprenticeship Levy, degree apprenticeships have proved to be the one level of apprenticeship where the numbers are rising not falling. There are currently 171 apprenticeship Standards at all levels (as of August 2018³) approved for engineering, and 15 Standards at levels 6 and 7. Large engineering companies, such as Siemens, are already involved in discussions with universities about developing apprenticeships at level 8 (doctorate level).

Degree apprenticeships may offer a bright new future for engineering in the UK. Innovation, however, always brings challenges. The best solutions often take time to evolve and now – while the models are still being refined – is the moment we should be exploring what is most effective and what needs further development.

The insights and experiences of all those forging the new approaches are welcome, especially the Engineering Professors' Council which represents the engineering academic community. In July 2017, the Royal Academy of Engineering was delighted to host the EPC's Degree Apprenticeships Forum which saw the publication of a discussion paper *Designing apprenticeships for success*. Since then, the RAEng has been proud to facilitate a discussion of these ideas among the whole engineering sector.

Now we warmly welcome *Experience enhanced*, the latest important contribution on degree apprenticeships from the EPC. It is important that the voice of academic experts is heard and we embrace the EPC's positive approach and collaborative spirit in striving to ensure the success of engineering degree apprenticeships for the nation, for employers, for the engineering sector and, most of all, for learners themselves.

The EPC's reflections and recommendations provide an important input for Government and a stimulus for all stakeholders, including the Academy, to continue to participate in the discussion.

Jonathan Seville
Chair, Education & Skills Committee
Royal Academy of Engineering



INTRODUCTION



THE profound shortage in the engineering skills pipeline is well documented⁴ and so the Engineering Professors' Council (EPC) enthusiastically welcomes the development and promotion of degree apprenticeships. Our vision is that, rather than representing any dilution of a traditional education, degree apprenticeships should become a gold standard that brings the rigours of applied academic learning and knowledge together with the practical skills and behaviours of the workplace – experience enhanced.

The EPC is not alone in this vision. The engineering sector shares the hope that degree apprenticeships will prove a significant channel for tomorrow's engineers to gain the competencies they need and, in the process, that employers will uncover rich new seams of talent.

However, much as we greet the future with optimism, whenever there is innovation, we must also consider the risks. We must 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. We understand that reasoning, but, however well intentioned, employers may be more concerned about ensuring apprentices are trained for specific jobs, rather than looking to the long-term needs of the sector, of the skills economy, or of the individual apprentice who may want to transfer to other employers to further develop their potential.

Moreover, there is a reason that the design of programmes in higher engineering skills has traditionally been the preserve of our universities. As academics, our expertise is 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, *Experience enhanced: Improving engineering degree apprenticeships* is intended as a significant policy contribution, addressing the issues that concern the academic community about degree apprenticeships. It 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 apprenticeships⁵ and on our discussion paper *Designing apprenticeships for success*,⁶ which addressed five key areas that we considered to be core to successful degree apprenticeships: apprentices' experience and outcomes; collaboration between HEIs and employers; accreditation and assessment; funding; and parity of esteem.

We have matured the themes addressed through consultation to date and have offered proposals to address the issues raised, which we hope will prompt discussion and changes in policy and practice by Government, employers, higher education institutions, the Institute for Apprenticeships (IfA) and other stakeholders (such as the professional engineering institutions).

As engineers, we work most effectively when we work together to design effective solutions. With this paper, we hope to start a process of discussion and action.

Professor Mike Sutcliffe
Chair, EPC Degree Apprenticeships Working Group



SUMMARY OF RECOMMENDATIONS



DEGREE apprenticeships offer an option that is intended to provide a different way of learning: combining the academic learning normally associated with higher education with the experiential learning of the workplace. We have considered how this recent and less well understood option can be better used to produce a new breed of 'experience enhanced' graduates.

RECOMMENDATIONS FOR GOVERNMENT

- Government needs to urgently address the complexity of messaging around degree apprenticeships and develop a centralised approach to raising awareness among prospective apprentices, providing information about options, brokerage and establishing shared application platforms.
- The term 'degree apprenticeships' has negative associations for some potential apprentices, being linked in their perceptions to lower level apprenticeships. We recommend that the Department for Education (DfE) explores opportunities to introduce more aspirational terminology and the IfA commissions urgent research into attitudes to different terminology.
- Government should adopt metrics that incentivise school management to support pathways into degree apprenticeships as equivalent to other forms of higher education.
- The OfS and the Government should explore ways to ensure evidence-based, early-intervention outreach is well funded. The EPC believes that the appropriate promotion of apprenticeships is a reasonable component of the cost of providing them. Employers should be allowed to offset the cost of independent and impartial outreach work against a proportion of their Apprenticeship Levy in the same way as they can currently use 10% of the levy to employ subcontractors. In order to avoid this becoming a means to offset the employers' recruitment costs, only independent and impartial outreach should qualify.
- A body of research into the effectiveness of – and best practice for – degree apprenticeships needs to be developed. This should be undertaken by the IfA, by the OfS and/or by Advance HE, and it is the DfE's role to ensure this responsibility does not fall between the cracks in this fast-evolving area of practice.
- To facilitate innovation and experimentation as best practice is developed, and to offset higher overheads as systems and infrastructure are put in place for degree apprenticeships in engineering, it is important they are adequately resourced. For a five-year period, when the revenue from the Apprenticeship Levy is likely to continue to outstrip the spending, the Government should either immediately raise the engineering degree apprenticeship fees or provide catalyst funding to support the development of programmes.
- Small and medium-sized enterprises (SMEs) employ the majority of workers in the engineering sector and face very different challenges to large employers. The IfA and the Government should conduct a review into the particular challenges for SMEs in the delivery – and ensure that SME voices are heard in the development – of degree apprenticeships.
- The Government and the IfA must urgently consider how to ensure non-completion (for reasons other than failure) is not a dead-end for

the apprentice. Credit transfer and modularity would be helpful, alongside a funding resource that apprentices can access in case of premature cancellation of an apprenticeship programme.

FOR THE INSTITUTE FOR APPRENTICESHIPS

- A modular approach to study would help attract more mid-career apprentices yet a fully 'hop-on-hop-off' approach is effectively precluded by the current framework for funding and by apprenticeship Standards. The IfA should review its policies to explore ways to introduce greater flexibility.
- Degree apprenticeship Standards can be too narrow. The IfA must ensure that development of Standards is a more open and ongoing evolution, allowing greater input from learning providers before and after the establishment of the Standards.
- The IfA must conduct a continuous process of reviewing under-utilised Standards or those used by only a small number of employers. Where necessary, steps should be taken to ensure that, unless they serve a niche role, Standards have broad applicability to multiple employers. Apprenticeships should promote flexible employability skills and skills across different and ever-changing areas of engineering. With this in mind, the IfA should ensure Standards always align with pathways towards professional recognition.
- If research demonstrates that the Standards fail to protect – and enhance – parity of esteem, then the Government must be prepared to raise the funding for engineering degree apprenticeships permanently to avoid damage to their reputation. The DfE must ensure the current review of post-18

education funding considers support for degree apprenticeships.

FOR EMPLOYERS

- The fact that degree apprenticeships are employer-led must not create an incentive to train apprentices simply for a specific job, but rather for a career.

FOR THE REGULATORY AND PROFESSIONAL BODIES

- Regulatory and professional bodies must give consideration to where in the sector additional professional registration assessors will come from and opportunities to streamline the process for degree apprentices who achieve their degrees and pass their End Point Assessments (EPAs).

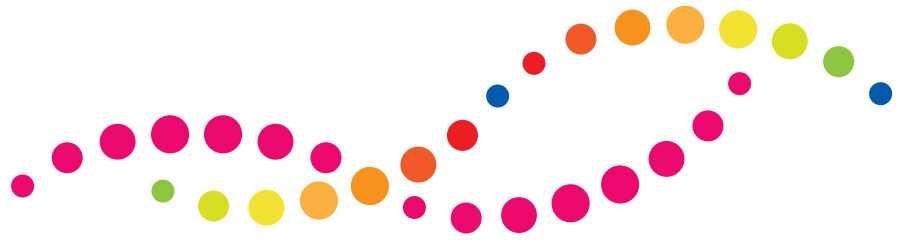
FOR THE OFFICE FOR STUDENTS

- Apprentices should participate in the National Student Survey (NSS) and OFS must consider how to recognise apprenticeships in the TEF and due consideration needs to be given to the potential impact on benchmarks for HEIs that provide a large number of apprenticeships.
- Degree apprenticeships should be explicitly considered as part of the OFS's strategy for wider access, participation and retention. This will entail closer alignment of collaborative outreach strategies with the Government's Careers Strategy in terms of working with employers to deliver effective outreach and working with schools to deliver outreach that encourages learners to find the pathways that suits them best.



DEGREE APPRENTICESHIPS

Experience enhanced



THE government, employers, universities and the whole engineering sector should regard degree apprenticeships as an option that offers the best of both worlds: a combination of the academic learning normally associated with higher education and the experiential learning of the workplace – all delivered at minimal cost to the student and with added career benefits.

If they are conceived and managed properly, degree apprenticeships should offer more than a traditional degree. We need to consider how best to achieve this and develop a new breed of graduates offering enhanced experience.

The term ‘degree apprenticeships’ has negative associations for some potential apprentices and their influencers, being more closely linked in their perceptions to lower level apprenticeships (and young people) than to higher level qualifications. **We recommend that the Institute for Apprenticeships (IfA) commissions urgent research into attitudes to different terminology**, such as ‘apprenticeship degrees’ or ‘degrees in practice’.

WHAT DOES ‘GOOD’ LOOK LIKE?

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 must 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 simply for a job rather than for a career.
- Graduates who have gained their degree through an apprenticeship route should not feel or be seen as in any way inferior to those who have graduated through a traditional degree. Indeed, all other things being equal, the additional career experience they should have acquired will give apprentices more immediate value and a head-start on the path towards professional registration.
- Consideration must be given to the fact that degree apprenticeships are likely to attract mature learners and individuals from groups underrepresented elsewhere in higher education, possibly with a wide range of prior learning but not necessarily traditional degree entry qualifications or academic study skills.



APPRENTICES' EXPERIENCE AND OUTCOMES



APPRENTICESHIPS that do not provide the apprentice with a positive learning experience and positive outcomes are doomed to fail. Apprentices need to acquire useful and relevant skills and knowledge that prepare them well for a career in engineering, rather than simply a job. The sector must rise to the challenge of developing a sense of the apprentice belonging or risk individual, course, outcome and pipeline underperformance. How do we design an experience that delivers?

1. EMPLOYER-LED STANDARDS, NOT EMPLOYER-DOMINATED

Our membership has reported repeatedly that degree apprenticeship Standards can be too narrow. This arises because the development of a Standard has been led by a small number of employers who base it on their experience of needs. Once a Standard has been established, competing Standards cannot be recognised. However, if the standard does not reflect the wider needs of employers and the apprentices' need for skills, knowledge and behaviours, then the standard blocks the space for a more widely appropriate standard. As a result, some Standards are likely to be underutilised even while the need for an apprenticeship in that area remains.

The problem may be especially acute for SMEs, which account for at least 99% of the businesses in every main industry sector⁷ in the UK and 60% of all private sector employment in the UK. Their needs as employers – which differ significantly from those of large employers' – may have been overlooked, as large employers have been dominant in Trailblazer groups. Ensuring that SME voices are heard in the development of degree apprenticeships is a real opportunity to ensure the sector will be inclined to engage in the delivery of apprenticeships.

The IfA must ensure that the development of Standards is a more open and ongoing evolution, allowing greater input from learning providers before and after the establishment of the Standards. This may lead to potential conflict with those employers

that have an objective to develop deeper specialisms, but it should be recognised that an apprenticeship that fails to serve the long-term interests of the apprentice will not be in the interests of the employer either.

2. DISCOVERABILITY

Compared to traditional degrees, degree apprenticeship opportunities are hard for students to find and the application process can be challenging. While some employers are already advertising apprenticeship vacancies across all levels on UCAS⁸ a shared application platform for all degree apprenticeship opportunities would be helpful. But UCAS is more than just a clearing house. It also acts as a single authoritative listing of (almost all) traditional degree opportunities and a familiar conveyor belt channelling students into higher education. A similar service would be invaluable in making degree apprenticeship discoverable (accepting that many employers would want to recruit locally and would not want their apprenticeships advertised on a national database).

Given that degree apprenticeships are a newer and less widely understood route, the need for clear options and simple processes is greater than for traditional degrees, and yet the system is harder to navigate. **The Government needs to develop a centralised strategy to raising awareness among prospective apprentices, providing information about options, brokerage and establishing shared application platforms.**



3. INCLUSION

Degree apprenticeships have the potential to attract different kinds of learners into higher education and training, particularly those from less advantaged backgrounds for whom the financial implications of study may be a deterrent factor.

Degree apprenticeships should be explicitly considered as part of the OfS's strategy for wider access, participation and retention. This will entail exploring ways to collaborate more closely with employers on outreach efforts in schools and communities. Currently employer groups are involved in some National Collaborative Outreach Project (NCOP) consortia, but very few employers themselves. This contrasts with the efforts of the Careers and Enterprise Company, which is attempting to encourage greater direct engagement between employers and schools. A more joined-up approach would be helpful.

The approach of both NCOP and the Careers and Enterprise Company is, however, not entirely consistent with the DfE's guidance to schools on careers education that it should be "independent and impartial", which is hard to reconcile with delivery by employers or consortia of educational institutions.

The OfS should support the Gatsby Benchmarks enshrined in the Government's Careers Strategy in terms of working with employers to deliver effective outreach and working with schools to deliver outreach that encourages learners to find the pathways that suits them best.

4. SENSE OF BELONGING

Research shows that learning is enhanced by a sense of collective belonging and that this reduces the tendency to drop out. This is particularly important for learners from academically non-traditional backgrounds and mature learners. Employers (and HEIs working with them) need to identify ways of enhancing engagement as part of a learning community. Research

commonly shows that teaching non-traditional students in mixed cohorts with their peers, where both groups will learn from each other, can be really effective teaching and learning practice.⁹

Apprentices would also benefit from evidence of best practice support for learning in degree environments. Opportunities to engage in co-curricular and social experiences, many of which also contribute to broader employability skills, may also be an existing good practice for providers of degree apprenticeships to consider adopting.

This might be possible as a solution provided by the employer in the case of a large cohort of apprentices, but **for smaller employers and large employers employing small numbers of apprentices, it will be necessary to consider how to integrate apprentices into a community within their working environment and/or within their study environment** (with the wider student body and/or with degree apprentices from other employers).

5. APPRENTICES' WELFARE AND REPRESENTATION

Within the traditional student community, students usually have access to welfare and support services ranging from pastoral care to child-care facilities. Providing such support to a wider range of more disparate students will require staff training and appropriate resourcing.

Moreover, students' interests are represented through their student unions and employee interests through trade unions (when recognised). However, the representative body for apprentices in the workplace can be unclear. **Employers need to consider representation of apprentices as a cohort in their organisation.** It may be that parallel systems would operate effectively, but particular consideration should be given to the appropriate processes for assessment appeals.



6. LEARNING SUPPORT AND ENHANCEMENT

Given that our aim is to establish degree apprentices as future engineering graduates with enhanced workplace experience, it is important that their academic experience is not a compromised version of that provided for traditional degree students. Degree apprentices on existing programmes have expressed the importance of teaching hours in a range of formats (workshops, webinars etc). **Employers and providers need to design programmes around maximising opportunities for teaching contact.**

Individual apprentices may start out with significant differences in experience and prior attainment. **Learning providers should provide opportunities for additional support in areas, such as maths and study skills, without which some apprentices will struggle.**

Employers should also ensure each apprentice has a mentor – other than their line manager – who can ensure the apprentice receives the academic support they need and is able to build up and record a portfolio of evidence useful to work towards CEng/Eng. These mentors could be registered engineers provided within the employer organisation, within the HEI or independent of either.

7. HOP-ON, HOP-OFF

A modular approach to return to study without committing at day one to a full degree could help attract more mid-career apprentices and their employers to the scheme, and better support equality and diversity. However, a fully ‘hop-on, hop-off’ approach is effectively precluded by the current framework for funding and apprentice Standards. In addition, the digital account system makes this very difficult to manage. **The IfA should review these and explore ways to introduce greater flexibility to enable the banking of units and AHEP learning outcomes and UK-SPEC competences.**

8. OUTCOMES

The Government and IfA must ensure degree apprenticeships work for everyone. ‘Employer-led’ should not mean that the employers’ desired outcomes are elevated to the exclusion of the needs of apprentices (nor of HEIs or taxpayers). Employers’ needs are generally aligned with apprentices’, but not necessarily. For example, an employer seeking to achieve return of their investment may value loyalty, while an apprentice may want career mobility. **The IfA needs to act as a regulator to ensure an optimal balance of needs is achieved and the Government should examine whether the IfA has the necessary powers for this purpose.**

MEASURING SUCCESS

The success of degree apprenticeships cannot simply be measured through the market demand of employers to run them and the ability of universities to provide them. There is a public interest in ensuring degree apprenticeships are of high quality in terms of supporting apprentice outcomes.

A common theme from recent reviews, including one from the National Audit Office¹⁰ was that the continued focus on a target of three million apprenticeships has meant that quality is being neglected.

The IfA is establishing an ‘Apprenticeship Panel’ to engage apprentices directly and report back to its Board. It is also planning to use outcomes metrics, such as salaries and destination data, to influence provision and to evaluate the quality of the apprenticeship programme. Although they are useful, these data do not capture positive outcomes such as when an apprenticeship facilitates a career that is in another sector, perhaps earning less, but which the individual finds fulfilling and benefits society.

Such metrics also do not measure the apprentice’s learning experience. **Apprentices should participate in the National Student Survey and OfS must consider**



how to recognise apprenticeships in the TEF. For the sake of parity with other degrees, degree apprenticeships should be treated with absolute equivalence and the metrics available be presented in a way that differences between university courses can be expressed and understood. However, **due consideration needs to be given to the potential impact on benchmarks for HEIs that provide a large number of apprenticeships.** (For example, they may skew socio-demographic and teaching intensity data.)

All metric approaches risk incentivising the chasing of the metrics per se rather than improving the qualities that the metrics hope to measure. This depends on the validity of the metric as a proxy. Research suggests that engagement is a better predictor of learning outcomes than satisfaction and, prior to its part-absorption into OfS, HEFCE had piloted a number of initiatives to measure learning gain. **The measurement of the effectiveness of degree apprenticeships must adopt an evidence-based best practice approach in choosing appropriate metrics and should, unless necessity dictates otherwise, treat apprentices no differently from other students. However, the presentation of metrics in a way that recognises differences is essential.**

Working with the OfS and the Government, the IfA must clearly establish how it proposes to assess the quality of specific degree apprenticeship programmes and of the national scheme. This should include the performance indicators and methodology that will be used.

DEVELOPING PARTNERSHIPS 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 forge new and better collaborations?

1. COLLABORATION BETWEEN EMPLOYERS AND HEIs

Degree apprenticeships should be designed to capitalise on the expertise of HEIs in teaching and learning and the opportunities employers provide to engage in in-practice learning in the workplace. The partnership between employer and HEI should blend these modes of learning so that the apprentice's experience is as seamless as possible and ultimately greater than the sum of its parts. In other words, distinct silos of so-called 'campus-based learning' and 'real world experience' must be systematically dismantled.

Achieving this will require a close collaboration between employers and HEIs, in which both parties understand each other's processes and activities, actively seek opportunities to enhance each other's teaching and training, and create positive feedback loops in which theory can be applied in practice and practice subjected to theoretical understanding.

A body of evidence into best practice needs to be developed, building on previous research into work-based learning. This should be undertaken by the OFS, by Advance HE and/or by the IfA, and it is the DfE's role to ensure this responsibility does not fall between the cracks. The IfA should also develop a strategy for sharing best practice with all stakeholders.

2. ESTABLISH CLEAR EXPECTATIONS

Misunderstanding about the division of responsibilities between employers and HEIs can lead to

poor outcomes for both parties and particularly for the apprentices. For example, all parties must have a clear understanding of who has primary responsibility for the wellbeing of apprentices and employers must communicate these arrangements clearly to apprentices. Meanwhile, few HEIs would be able to cope with a range of bespoke arrangements with a number of different employers. As the number and range of employers offering degree apprenticeships grows, the lack of standardised expectations presents a risk to the capacity of HEIs to deliver.

The Engineering Gateways¹¹ section on the Engineering Council website currently provides useful resources such as template agreements between employers and HEIs and there are other resources such as the UVAC Template HEI and Employer Apprenticeship Contract.¹² In addition, the IfA developed a 'getting started' support package for employers at the pre-proposal stage.¹³ Such steps could provide templates or examples of best practice.

The IfA should conduct systematic research to assess the take-up of these resources and whether there is a need to extend this to ensure there are clear and accessible guidelines and template agreements. This should take particular note of the needs of SMEs.

Although critical, it is not sufficient simply to establish expectations up front. The process of open communication between employer and HEI – beyond the formal reporting requirements – needs to be developed continuously. **The principles, channels and opportunities for communication should be mutually**



understood and integrated into guidelines and agreements.

The IfA is supporting trailblazer groups through a team of relationship managers who guide the group through the apprenticeship development process. Relationship managers would also be helpful to provide similar support to HEIs and other training providers. **In the short to medium term at least, the IfA should extend the role of the relationship manager to developing best practice approaches to degree apprenticeships and creating support documentation.** Such individuals should hold engineering professional registration.

3. THE NEEDS OF SMEs

Trailblazer groups tend to comprise primarily of large employers usually offering programmes to a large number of apprentices. They have well-resourced HR departments and organisational structures that allow support systems for apprentices to be put in place. As they may have a cohort of apprentices each year, rather than single individuals, those apprentices also gain from a sense of belonging.

However, this means that employer-led degree apprenticeships have not been led by organisations that are representative of employers of the majority of the UK workforce (and the majority of workers in the engineering sector in particular). SMEs face very different challenges to large employers and it has not been in the competitive interest of large Trailblazer firms to ensure the system is well-designed for smaller employers.

The IfA and the Government should conduct a review into the particular challenges for SMEs in the delivery of degree apprenticeships. This review should have scope to recommend whether non-levy paying employers need additional systematic provision or financial incentives to ensure apprentices enjoy the wider benefits of a well-supported learning environment.

4. COLLABORATIVE BODIES

We support the work of Group Training Associations¹⁴ 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 costs and, whenever possible, provide the best resources for learners. For instance, it might be possible to establish shared apprenticeship schemes, where apprentices could go to different organisations, mixing and matching employers or training providers in the same geographic region. An example is the Pearson's Business Management rotational degree apprenticeship¹⁵ which rotates apprentices, albeit around partner companies.

The Government should create opportunities and incentives to encourage the growth and spread of such initiatives and the IfA should facilitate brokerage so that employers and HEIs can discover Group Training Associations and work with them.

National Centre for Universities and Businesses (NCUB) has a track record in supporting such collaborations through creating brokerage platforms such as *konfer* and *engineering workwith*. A similar approach would be worth exploring.

We also encourage involvement of other industry organisations such as EEF (The Manufacturers' Organisation), The Science, Engineering and Manufacturing Technologies Alliance (SEMATA) and others who may be able to share their knowledge of employer needs and consult employers on draft standards.

5. CREATING STANDARDS AND PROGRAMMES

As noted above, some apprenticeship Standards have been employer-dominated rather than employer-led, focusing on the needs of a particular job rather than a career. An important aspect of career-long

employability is flexibility and a level of understanding spanning different engineering disciplines. Apprenticeships' outcomes should be portable and facilitate progression between apprenticeship levels towards professional recognition.

To foster Standards that promote these skills, HEIs should be regarded not merely as training providers, but essential co-creators of programmes. Apprenticeships should be seen as a three-way partnership between employer, training provider and apprentice.

The IfA must conduct a continuous process of reviewing under-utilised Standards or those used by only a small number of employers and, where necessary, take steps to ensure Standards have broad applicability to multiple employers or serve a genuine niche need and promote flexible employability skills and skills across different and ever-changing areas of engineering.

With this in mind, the IfA should maintain the policy that Standards must always align with pathways towards professional recognition (see below).

6. MAINTAINING PARTNERSHIPS

Partnerships are about close communication on a continuous basis and they are also about mutual understanding. **Intrinsic to the relationship between employer and training provider should be a clear schedule of regular and frequent communication** – beyond the written reports on apprentices' progress.

There should also be a continuing professional development plan for key staff in both the employer and the HEI to ensure they are suitably skilled to support the apprenticeship programme and the apprentices themselves. It would be reasonable to expect that these CPD activities should involve placements of teaching staff in industry and vice versa

as a form of knowledge transfer of both industry and HE practice.

It should be considered good practice to encourage key staff in both the employer and HEI to engage with the Higher Education Academy¹⁶ (HEA) and the UK Professional Standards Framework (UK-PSF) with particular regards to supporting and recognising the professionalism of trainers in employer organisations, and with reference to creating programmes and standards. Key partners from both employers and providers should be encouraged to seek Fellowship of the HEA at a grade that is appropriate for each individual.

Similarly, engagement with the Equality Challenge Unit¹⁶ should ensure that diversity, equality and inclusion have been explicitly considered in the design and implementation of apprenticeships. Additionally, development of leadership skills can be supported by the Leadership Foundation for Higher Education¹⁶ and employers.



RECOGNITION OF ACHIEVEMENT



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 fair and rigorous system of assessment and recognition that is aligned to professional progression?

1. A MENAGERIE OF OUTPUTS

As currently conceived, an engineering degree apprenticeship has four discrete outputs:

- A degree, awarded by the HEI, which is usually accredited by one of the professional engineering institutions;
- An end-point assessment (EPA), assessed by a registered EPA organisation;
- Continuing employment, decided by the employer;
- Evidence towards professional registration (with registration subject to individual candidates being assessed by a professional engineering institution professional review processes, which may in some instances be incorporated into the EPA and in other cases be completed at a later stage after completion of the apprenticeship).

These are all independent of each other, although interdependent, and it would be possible for an apprentice to pass or achieve some but not all of these outputs.

This diversity of outputs, each subject to their own assessment criteria and process is confusing even to experts and baffling to most employers and apprentices, let alone parents, teachers, careers advisors across all ages and HR departments. The idea of promoting a broad appreciation of the benefits of a degree apprenticeship operating under such a framework is, at best, a challenge and, at worst, unworkable.

The Government should consult on plans to reduce this complexity, including:

- merging assessments;
- blending assessments to ensure success in one contributes to success in the other (and vice versa);
- obligations on employers to treat apprentices in the same way as any other employee on completion of their apprenticeship in terms of their rights to continued employment, subject to continuation of the need for the role (rather than regarding them as low-cost labour and replacing them when the apprenticeship is complete);
- assured progression towards professional recognition as a Standards requirement for all engineering degree apprenticeships.

This last point is critically important and potentially deliverable by the IfA, but it involves alignment of Standards to UK-SPEC competences and the Engineering Council's higher apprenticeship recognition processes and standards (which are currently in development). Until the Engineering Council's work is complete there is not a formal mechanism for professional recognition by one of the PEIs beyond either accreditation of the degree or individual professional review.

This should go beyond the short-to-medium term needs of the employers who have helped to develop the

Standards. Failure to do this would allow undesirable employer-dominated Standards. Rather, apprenticeship Standards should be employer-led and, to this end, **the IfA must ensure that there is significant expert input from professional engineering institutions in the setting of Standards** as well as, as already stated, education providers.

2. TRANSPARENCY AND SELF-REFLECTION

Even if assessments and outputs are not more closely aligned in a formal sense, it is in the interests of all parties, particularly the apprentices, that they always feel that they are working towards a clear and consistent goal.

To this end, all partners (apprentices, 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.

Apprentices should be supported by employers and HEIs to develop reflection skills to monitor their own progress in terms of which skills they are developing and how. They should record their learning process and be able to present evidence of working towards achievement. Recording evidence of professional development is also useful for an individual's professional review. A reflective portfolio, owned by apprentices, should be regular best practice – facilitating continuous assessment and feedback.

3. MODULAR APPROACHES

Clarity and transparency about the learning milestones and the required learning outcomes should make it easier to modularise degree apprenticeships. Modularity is critical to ensuring apprentices have the flexibility to hop-on and hop-off programmes or to

transfer between HEIs (which may be necessary as an alternative to abandoning the programme under circumstances that are more likely to affect more mature apprentices or those from less affluent backgrounds). It would also facilitate transfer between employers, which may be convenient for SMEs and would protect apprentices should their employment be curtailed.¹⁷

The IfA should consult with employers and training providers how best to ensure degree apprenticeships adopt a modular approach. Furthermore, the IfA should consider whether a link between credits and training programme milestones should be included in all degree apprenticeship Standards, ensuring that the timelines of the two activities are aligned. **Industrial work packages should represent consolidation of university work packages and vice versa.**

4. PROFESSIONAL REGISTRATION

The EPC supports the IfA's recommendation that degree apprenticeships (level 6 and 7) should align, as closely as possible, with the requirements for professional registration. Indeed, subject to the apprentice having opportunities to demonstrate all Incorporated Engineer (IEng) or Chartered Engineer (CEng) UK-SPEC competences and payment of fees not currently covered by the levy, **professional recognition should be built in to engineering degree apprenticeship Standards**, i.e. the potential to be registered as IEng or CEng. This will require employers to ensure there are sufficient workplace opportunities to develop, demonstrate and evidence competences, and to recruit apprentices who have the potential to achieve professional registration.

It has been argued that the flexibility needed to accommodate different employers' requirements means that professional registration will in many instances



need to be reviewed on an individual case basis. However, the existing infrastructure of professional registration assessors is simply inadequate to meet significantly increased demand. **Professional bodies must give immediate consideration to opportunities to streamline the process for degree apprentices who achieve their degrees and pass their EPAs.**

5. PROGRESSION

Degree apprenticeships are designed to attract a different type of learner. Historically, non-traditional students have experienced higher non-completion (also known as drop-out) rates on degree programmes. While the data available¹⁸ do not yet provide a comprehensive or representative picture, there is anecdotal evidence of both high and low non-completion rates among degree apprentices.

If the patterns of drop-out are lower than traditional higher education, that may be because degree apprenticeships are genuinely more effective at ensuring completion, or it may be that they have to date attracted atypical learners, in particular those who are more affluent, better informed or more determined.

The OfS must conduct research into the non-completion trends of degree apprentices with particular reference to the demographics of apprentices in order to identify whether degree apprenticeships are better at ensuring the completion of non-traditional students or perhaps represent a greater drop-out risk.

In the meantime, we must be on guard to support against high drop-out rates among degree apprentices. This is a real concern as it is financially costly to universities if apprentices drop out, and personally costly to apprentices. We therefore strongly urge employers and providers to think about how to support non-traditional students. Further, if degree apprenticeships do prove to be more effective at

retention than traditional degrees with this target group we also need to build on best practice and better outcomes for the apprentices themselves.

The Government and the IfA must urgently consider how to ensure non-completion (for reasons other than failure) is not a dead-end for the apprentice. Recognition of a broad range of prior learning, credit transfer and modularity should be reviewed, alongside a funding resource that apprentices can access in case of premature cancellation of an Apprenticeship Programme. This fund should be sourced from the Apprenticeship Levy and/or employer contributions on a deposit basis. Consideration should be given to what support might be needed by apprentices when their employer makes them redundant.

A SUSTAINABLE SYSTEM



TO be sustainable, the degree apprenticeship system needs to meet the needs of all stakeholders, be financially secure and achieve a high level of esteem alongside traditional pathways.

1. MEETING STAKEHOLDER NEEDS

Any realistic hope that the Government will reach its ambitious target of three million apprentices by 2020 is slipping away fast as the number of apprenticeship starts since the introduction of the levy has fallen significantly.

Degree apprenticeships are the exception to the trend, perhaps because they offer some clear advantages to both apprentices and employers in comparison with traditional degree pathways. For degree apprentices, there is the opportunity to avoid student debt and to have greater employment security. For employers, the costs are comparable to graduate recruitment and learning can be shaped to their specific needs. Larger employers – those paying the levy – have the most to gain and are best able to take advantage of the opportunity.

However, even with these advantages, degree apprenticeships remain a less appealing prospect for small and medium-sized enterprises. The maze of Standards, assessments and collaboration with learning providers is much more complex compared to conventional patterns of recruitment. What's more, the recent collapse of the Tech Partnerships has exacerbated the sense of risk. Given the proportion of engineering jobs that are in SMEs and that these firms represent significant economic activity in areas that the Government's Industrial Strategy aims to support, failure to make Apprenticeships attractive to these employers is potentially damaging not only to the future of apprenticeships, but the whole economy.

Similarly, for prospective apprentices, teachers, careers advisers, and parents the apprenticeship landscape looks unfamiliar and complex. When compared to the path-of-least-resistance process of

university application through UCAS, discovering degree apprenticeship opportunities, applying to them and often surviving a number of recruitment rounds looks like an obstacle course.

The Government must urgently address the complexity of messaging around degree apprenticeships and the lack of informed and professional careers guidance in schools (from primary school onwards). Apprenticeships – particularly degree apprenticeships – must be reframed as (for many people) the best of both worlds: workplace experience and academic qualifications.

As already mentioned, **the Government also needs to stimulate proactive brokerage between prospective apprentices and employers to make it easier for applicants to find and secure a suitable apprenticeship by entering a pool of prospective candidates from which employers can select individuals.**

2. FINANCIAL SUSTAINABILITY

To ensure HEIs have no incentive to deliver engineering degree apprenticeships 'on the cheap' by lowering standards and undermining parity of esteem, they must be adequately resourced.

From the perspective of higher education institutions, the levy-funded fee for an engineering degree apprenticeship is capped at £27,000 (which also has to cover the cost of the end point assessment), whereas the maximum fee level for a traditional engineering degree is currently £37,000 (assuming a four-year course), sometimes with a supplementary teaching grant (particularly for Chemical and Materials Engineering). Commonly, the cost of teaching engineering degrees exceeds the direct funding



available and the cost is cross-subsidised from other courses, higher fees from international students or research and other income.¹⁹

This discrepancy means degree apprenticeships have to be delivered at a considerable cost saving compared to traditional degrees. It may be argued that savings should be possible because the workplace learning could potentially mean lower teaching intensity and assignments. However, degree apprenticeships also carry a high burden of communication and liaison and may require different teaching and learning approaches for students with different academic needs. Employers are also concerned that the levy-funded fee is not sufficient to train a degree apprentice.²⁰ The EEF estimates an engineering apprenticeship (not necessarily an engineering degree apprenticeship) costs £80-90,000 to offer and deliver.²¹

Furthermore, unlike traditional degrees, which are funded upfront, degree apprenticeships carry a greater financial risk and uncertainty for HEIs, not least because 20% of funding can be held back if an apprentice does not complete their end point assessment. Given all the challenges described above, it must be assumed a significant proportion will indeed drop out or fail.

If engineering degree apprenticeships are to see a rapid period of expansion, there will be higher overheads and up-front costs as systems and infrastructure are put in place. There will need to be innovation and experimentation as best practice is developed. During this period, the revenue from the Apprenticeship Levy is likely to continue to outstrip the spending. **For a five-year period, the Government should either immediately raise the engineering degree apprenticeship fees or provide catalyst funding to support the development of programmes.**

Over the medium term, the number of HEIs willing to offer engineering degree apprenticeships will be one indicator of whether they can be provided at the lower cost, but that will not provide any assurance that they

are being offered at a standard that achieves parity of esteem. **The IfA and Government must commission independent research to examine whether degree apprentices receive a learning experience comparable to traditional students, highlighting best practice in terms of achieving cost savings and identifying ineffective approaches as part of a growing body of evidence around what is bound to be a fast-evolving area of practice.**

There are two ways to achieve greater financial sustainability: either per capita levy funding needs to be raised or employers must be prepared to supplement that funding. **The DfE must ensure the current review of post-18 education funding considers support for degree apprenticeships.**

3. PARITY OF ESTEEM

Over many decades vocational and technical pathways have failed to gain parity of esteem with traditional academic routes. To ensure degree apprentices not only achieve at least equivalent levels of proficiency, but are also recognised as adding extra experiential value, the patterns of the past must be consciously recast. This has implications for the funding, promotion and organisational structures behind degree apprenticeships.

The branding of apprenticeships is problematic as the name carries connotations of low status with young people and their influencers. This amounts to a sense that an apprenticeship is junior, whereas a degree is aspirational. Seeing entry to traditional university programmes as a success and entry to apprenticeships as a failure in school success measures (and the consequent use of those metrics in league tables) is a huge problem anecdotally.

The DfE should look for opportunities to introduce more aspirational terminology and the IfA should undertake a study to assess the impact of current terminology and alternatives. In the meantime, the Government, employers and other engineering sector

stakeholders should promote degree apprenticeships as not simply equal to a degree, but providing more than a degree, combining knowledge and understanding with workplace knowledge and competences.

Despite apprentices repeatedly citing the opportunity to achieve a degree without debt as their motivation to study a degree apprenticeship, it may not be helpful to present degree apprenticeships as a 'low-cost' or 'free' way to acquire a degree qualification. Such messages may inadvertently devalue degree apprenticeships. The focus should be on a different way of learning that provides additional work-related learning.

This promotion requires a change of culture in large swathes of the schools system – traditional school cultures feed into biases about academic and technical routes. Whether intentionally or not, the Government – DfE in particular – perpetuates this through performance metrics (such as the progression rate to higher education and in particular to selective universities) that assume a hierarchy of outcomes. **The Government should adopt metrics that incentivise school management to support pathways into degree apprenticeships as equivalent to other forms of higher education.**

The Government's Careers Strategy seeks to address the problems of careers education, information, advice and guidance (CEIAG) in schools, which has (perhaps generously) been described as "patchy".²² However, in order to address deficiencies and preconceptions, **the Careers Strategy should be extended to guarantee access to continuous and contiguous careers support by professional practitioners as a right for all pupils throughout secondary education and ideally in primary schools.** CEIAG and outreach should also address the awareness and attitudes of parents.

CEIAG practitioners need to be trained and registered in order to maintain their understanding of different routes and, in the context of

engineering, to encourage individuals to look for accredited qualifications.²³

In support of formal CEIAG, we need to look to other forms of intervention and aspiration raising:

- Efforts by the higher education sector to improve fair access have proved successful and developed an evidential basis for effective outreach. **The Office for Students and the Government should explore ways to ensure evidence-based, early-intervention outreach is well funded and captures data to support understanding of what works.**
- The Careers Strategy emphasises the role of employers in CEIAG, but does not articulate the short-to medium-term benefits to employers. **Employers should be allowed to offset the cost of outreach work against a proportion of their Apprenticeship Levy on the basis that the appropriate promotion of apprenticeships is a reasonable component of the cost of providing them. In order to avoid this becoming a means to offset the employers' recruitment costs, only independent and impartial outreach should qualify.**
- Other organisations, such as STEM Learning, and EngineeringUK also conduct effective outreach. The Royal Academy of Engineering is already working with the sector to try to map and coordinate these activities better. To support these activities, **employers should look for opportunities for degree apprentices to act as ambassadors or mentors of secondary students, not only to support those students, but to further their own learning.**

It is important that CEIAG draws clear links to the employment market to help inform young people, parents and schools. However, it is also important not



to imagine that career choices are wholly utilitarian. Outreach work should make greater use of behavioural science and existing evidence on what influences choices about entry into engineering.

When it comes to recruiting degree apprentices, it would support parity of esteem if they required similar entry requirements to other entry routes into higher education. However, apprentices are employees so will be subject to the recruitment requirements of employers. Degree apprenticeships should also provide opportunities for those without the same formal record of academic attainment. **Employers should recruit on the basis of a demonstrable potential to succeed in the academic environment as well as the workplace and should work closely with learning providers to understand how such potential may be assessed.**

If research demonstrates that the standards fail to protect – and enhance – parity of esteem, then the Government must be prepared to raise the funding for engineering degree apprenticeships permanently to avoid damage to their reputation.

IMPLICATIONS FOR THE DEVOLVED NATIONS



WHILE this policy paper focuses primarily on England, degree apprenticeship policy is devolved and there are significant differences across the four nations of the UK. Practice cannot and should not be seen in isolation as the education system, the employment market and the Industrial Strategy are all UK-wide.

The current lack of joined-up thinking makes it difficult to deliver and support a degree apprenticeship initiative of the appropriate quality and the frustrations of big business operating across the four nations is well documented. **The Government must be mindful of the need for alignment between all devolved nations. International alignment and value should also be considered.**

In order for degree apprenticeships to be truly transnational, a mapping of Standards and frameworks across the devolved nations is required. Opportunities to recognise Standards through various international accords²⁴ should also be sought.

With that in mind, each nation can be reflected on briefly. This is not about describing the situation, but about providing a minimum of scene-setting to justify recommendations.

SCOTLAND

While the overall aims of apprenticeships in Scotland closely match the rest of the UK, the means by which apprenticeships at degree level are approved and funded differ significantly. Not least, the apprenticeship is 'free of charge' to the employer, that is to say there is no fee, although employers do need to set aside time for the apprentice to study and provide some mentoring support. This practice is funded by the European Structural and Investment Fund through a competitive tendering process for Graduate Apprenticeships.

In addition, the SCQF level 10 framework funding requires an Honours degree to be delivered in four years. The learning must be an integrated combination of university-based learning and work-based learning. There is considerable variation in the pattern of provision, including day release and online blended learning. This length of study does not lend itself to the 'enhanced' label and does not propose parity of esteem with a full-time degree.

NORTHERN IRELAND

The proposed Northern Ireland system places quality and compliance in a central role, with the focus on achievement rather than participation.

The main issue for Northern Ireland is that the money for the levy is coming from all UK companies into the Treasury but there seems as yet no way for companies to access this money; probably until a functional Executive in Northern Ireland can negotiate how it is considered in the block grant.

Therefore, in the short term, the Northern Ireland Department of the Economy is providing funding directly to degree apprenticeships that it has approved, and it only allows these to be delivered by the universities or FE colleges in Northern Ireland. It is not permitting third party private providers at this time.



WALES

The Welsh position is still not clear. The Welsh Government in June 2018 announced that they “will be taking a new approach to completing the degree apprenticeship framework for engineering and advanced manufacturing”, with this new approach being led by a different organisation (originally SEMTA) on the drafting of the framework. At the same time, the Welsh Government announced a new Skills and Employability Manager at the Higher Education Funding Council for Wales (HEFCW), who will be the new contact point for degree apprenticeships.

THE EPC recommends that, following this pause for thought in Wales, **any new system should easily allow partnerships across the devolved nations, since many of the companies likely to be partners in offering degree apprenticeships would have offices, and draw apprentices from, across the UK.**

GLOSSARY AND ABBREVIATIONS



AHEP Accreditation of Higher Education Programmes. The requirements for the Accreditation of Higher Education Programmes²⁵ 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.

AQAH Approval of Qualifications and Apprenticeships Handbook. The Approval of Qualifications and Apprenticeships Handbook²⁶ describes the approval process and required output Standards for the purpose of technician registration (EngTech or ICTTech).

CEIAG Careers Education, Information, Advice and Guidance

CEng Chartered Engineer

CPD Continuous Professional Development

DfE Department for Education

EngTech Engineering Technician

EPA End-point assessment

EPC Engineering Professors' Council

Engineering Council UK regulator for the engineering profession

HA Higher Apprenticeships

HEFCE Higher Education Funding Council for England (now closed and subsumed into the Office for Students)

HEFCW Higher Education Funding Council for Wales

HEI(s) Higher Education Institution(s)

IEng Incorporated Engineer

IFA Institute for Apprenticeships

NCOP National Collaborative Outreach Project

OfS Office for Students: the regulator for higher education in England

PEI Professional Engineering Institution

SME(s) Small and Medium-sized Enterprise(s)

TEF Teaching Excellence and Student Outcomes Framework

UCAS Universities and Colleges Admissions Service

UK-PSF United Kingdom Professional Standards Framework

UK-SPEC UK Standard for Professional Engineering Competence. The UK Standard for Professional Engineering Competence²⁷ sets out the competence and commitment required for professional registration²⁸ 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.

UVAC University Vocational Awards Council

In engineering in the UK, the Engineering Council is the regulator, setting the Standards and maintaining the register, while PEIs are the professional bodies that assess programmes and individuals against the Standards.



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- ¹⁶ It should be noted that the Equality Challenge Unit, the Leadership Foundation for Higher Education and the Higher Education Academy have now merged into Advance HE (bit.ly/ExpEnhanced-AdvanceHE).
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CONTRIBUTIONS



THE ENGINEERING PROFESSORS' COUNCIL DEGREE APPRENTICESHIPS WORKING GROUP was created under the auspices of the Engineering Education, Employability and Skills Committee (EEES), aiming to explore best practice and barriers to higher education institutions (HEIs) delivering degree apprenticeships in engineering – informing Government, employers and the Institute for Apprenticeships from a provider perspective. We would like to express our sincere thanks to the Working Group for their commitment, expertise and generosity with their time.

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