

Education for Engineering submission to the DfE consultation on Higher Technical Education

1. Introduction

- 1.1. Education for Engineering (E4E) is the body through which the engineering profession offers coordinated advice on education and skills policy to UK Government and the devolved Assemblies. It deals with all aspects of learning that underpin engineering. It is hosted by The Royal Academy of Engineering with membership drawn from the professional engineering community including all 35 Professional Engineering Institutions, the Engineering Council, EngineeringUK and the Engineering Professors' Council.
- 1.2. The UK is facing an expected annual shortfall of 204,000 technicians with level 3+ skillsⁱ. Failure to address this shortfall, particularly in the context of a restricted international supply, will negatively impact the UK economy and prevent thousands of people from accessing a rewarding career in engineering.
- 1.3. Addressing inequality and increasing diversity is a critical issue for the engineering community. The engineering skills gap that poses such a risk to the UK economy would be closed if engineers were demographically representative of the society they serve.
- 1.4. HTE has the potential to act as a vehicle to for educational equality, but this is currently not the case for engineering. Research conducted by RCU on behalf of the Gatsby foundationⁱⁱ shows that engineering higher education, unlike many other disciplines, is not currently being accessed in large enough numbers by the most disadvantaged people.
- 1.5. The vast majority of pupils that opt for an engineering education beyond level three choose to do so via a degree routeⁱⁱⁱ, despite more suitable opportunities within technical educational routes that can lead to higher earning potential^{iv}. This is a significant challenge to overcome, requiring a strong HTE brand that reaches young people, schools, parents, adults and employers.
- 1.6. Any reform of HTQs will not be successful, regardless of the scale of the changes made, unless people inside and outside of the education system are fully informed of the potential of higher technical education and how to access it. HTE must offer clear, understandable routes to success, supported by schools, providers, parents and employers.
- 1.7. E4E believes that the 35 licenced Professional Engineering Institutions (PEIs), that act as accrediting institutions, representatives of hundreds of thousands of engineers across the UK (and in some cases, awarding bodies) are in a strong position to offer support and guidance to the DfE, IfATE, Ofqual and OfS in regards to higher technical education and qualifications.
- 1.8. After the conclusion of any reforms to Higher Technical Education, the DfE must ensure that there is a sustained period of stability in order to provide students, employers and providers with a real opportunity to understand and engage with HTQs.

Aims of Higher Technical Education

2. To what extent do you agree or disagree with the proposed aims of HTQs set out in paragraph 9 of the consultation document?

- 2.1 E4E agrees with and broadly shares the proposed aims of HTQs in that they will be valued by employers and provide credible and prestigious alternative to a degree or apprenticeship. Whilst the value to employers is mentioned in each of the three bullet points in paragraph, too little is made of the value to students in terms of opportunities for fulfilling careers, earning potential and the chance to develop their technical education through well-signposted, meaningful routes to high-level qualifications.
- 2.2 More detail could be added to emphasise the transferability, progression and mobility of HTE/HTQ training, and the flexibility that should allow those outside of the education system to access HTQs. It should also be a stated aim that these qualifications be internationally recognised.

Submission of qualifications by awarding bodies

3. Are there any points you would like to raise regarding our proposal for Awarding Bodies to voluntarily submit qualifications for approval by the Institute against occupational standards?

- 3.1. The proposal for awarding bodies to submit qualifications for approval on a voluntary basis (but with financial incentives to do so) will likely result in awarding bodies submitting their qualifications as-is, or modifying existing qualifications to fit the standards. There is some concern within the engineering community that elements of existing qualifications valued by employers may be lost during this process.
- 3.2. As well as incentivising awarding bodies to map existing qualifications onto standards, the new proposals should aim to incentivise (possibly financially) awarding organisations to offer new qualifications that are tailored to the needs of society, the economy and employers, with additional financial incentives to create qualifications that fill current gaps.
- 3.3. On the issue of the standards themselves, it is vital that HTQs, and by extension the standards they are based on, are recognised and valued by industry. This is particularly important for safety critical roles within engineering (in aerospace, welding, railway maintenance, nuclear, etc.), where national occupational standards or certification of personnel are seen as vital pre-requisites. Certification is also mandated by Government safety agencies (such as CAA and HSE), yet the DfE does not currently recognise these as legitimate qualifications in their own right. It is important to find a way forward that maintains the principles of high quality and transferable HTQs, whilst also satisfying the essential demands of the industries that these qualifications aim to serve.
- 3.4. The Professional Engineering Institutions (PEIs), as representatives of their respective disciplines, are the main arbiters of the competencies required within their industries. The DfE must work closely with The Engineering Council and the PEIs to establish the key set of knowledge, skills and behaviours of engineering occupations that should form the basis of standards. Failure to engage with The Engineering Council and the PEIs may result in HTQs that

are not recognised or valued by the profession, and may ultimately lead to a situation where they are not valued or respected by students either.

- 3.5. For companies that operate across the UK, there is already frustration at disjointed technical education policy across the devolved nations. Under current regulations, all four nations are required to agree on the content of occupational standards, but a company based in Scotland cannot run an English apprenticeship. As far as possible, the DfE must ensure that there is a high degree of alignment of Higher Technical Qualifications across the devolved nations.
 - 3.6. Despite a rapid growth in the number of standards developed, there is currently an uneven distribution of standards. Level 5 Civil engineering and Level 5 Architectural Technology are both popular qualifications provided by Pearson that currently have no standard attached. The DfE must ensure that standards exist at all levels, providing a clear, unbroken path for all students from the lowest to the highest technical qualifications, whether or not they choose to follow this path, or step-on or step-off it at different points. The DfE should consider conducting a gap analysis of all higher technical qualifications and where there are gaps, commission and incentivise the creation of standards and qualifications.
 - 3.7. IfATE must ensure that the route panels that approve standards include practitioners with relevant technical knowledge, as well as senior members of staff, and ensure that the panels draw membership from companies with a range of sizes, particularly SMEs, to avoid domination by from a single employer/small number of employers.
 - 3.8. Route panels should also draw on pedagogical expertise to ensure standards recognise effective learning models. They should also ensure that the long-term interests of learners are represented beyond those interests that coincide with their likely first-stage employers. Ideally, these wider interests should be reflected in the membership of the route panels.
 - 3.9. E4E is encouraged by the contents of paragraph 97, which welcomes views on how the DfE might work with relevant professional bodies, including capitalising on their role managing professional standards, schemes of professional registration and the award of post-nominals. This paragraph gives the strongest indication yet that the DfE are open to involvement of professional institutions in the approval process.
- 4. Would you support incorporating the flexibilities/requirements set out in paragraph 35 in the Institute approval process, and are there any specific points you would like to raise in relation to these flexibilities/requirements?**

- 4.1 The group welcomes the plans to allow the inclusion of a degree of occupationally-relevant content in a qualification, which is not aligned to occupational standards. This flexibility will be vital for employers, particularly SMEs, whose interests may have been underrepresented in the creation of occupation standards. More clarification is needed on the extent of this flexibility; does this allow for the modification of qualification content, or just the addition of content? What proportion can be modified/added? Are there parts of qualifications that will not be flexible?
- 4.2 Work-based learning is valued by engineering industry and should be part of HTQs where possible, but E4E advises caution when considering work-based learning as an essential part of HTQs. Work placements are particularly susceptible to the UK's economic fortunes and should

therefore be included as an optional, credit bearing element of HTQs to mitigate against the risk of a lack of availability.

- 4.3 The expectation that the nation's employers will be disposed to facilitate a significant quantity of work-based learning (in addition to the rising expectations related to wider work experience for school pupils and T-level placements) may be fanciful. The Government should undertake research to ensure that these expectations are realistic and likely to remain so regardless of economic conditions. It may prove more constructive to build on existing models of work-related learning that are already well established among many higher education providers (particularly in Engineering, usually as part of degree courses), using either project learning or partnerships with industry.
- 4.4 E4E views alignment with professional body standards as a vital feature of engineering higher technical qualifications. Engineering and construction, perhaps more than any other sectors, relies on the possession of professional standards deemed critical to safe and successful working. Permitting the flexibility to include these standards within HTQs would be an important step towards their acceptance by industry.
- 4.5 E4E also welcomes the approval of modular qualifications that could be taken individually, or combined to fit the needs of different users, with clear rules for module combinations. This would offer greater flexibility to structure learning around the needs of the learner or of the employer, particularly upskilling – and horizontal retraining to allow inter-sectional mobility - within SMEs and micro businesses. Smaller modules would be easier to write and put onto the market, but issues of funding modules with low up-take might arise. These courses should also be available part-time, which would allow for greater flexibility for individuals who have other commitments and may be unable to commit full-time, specifically, more mature learners.

5. Are there any points you would like to raise regarding our approach to retaining existing Ofqual and OfS regulatory arrangements?

- 5.1 Concerns have been raised about the potential for bureaucracy and duplication if two bodies attempt to regulate different elements of higher technical qualifications. E4E are also concerned that Ofqual and OfS are not best placed to determine the quality of higher technical qualifications in engineering as they may not currently have the technical expertise to assess the competence of deliverers. Given the combination of academic and industrial expertise inherent to engineering technical qualifications, they present unique challenges not faced by OfS or Ofqual in their current regulatory roles. That said, E4E recognises that OfS has an important role in protecting the interests of learners.
- 5.2 E4E believes that in order for engineering employers to have confidence in Higher Technical Qualifications, the Engineering Council, as the regulator of the engineering profession, should be involved in the regulation process. Creating links between the OfS and the professional bodies that already perform these functions may also reduce costs and create greater student confidence in the quality of technical education provision.
- 5.3 Special technical competencies should be brought into a regulatory framework, supported by PEIs and the Engineering Council. As an example, the DfE can look to BEIS, who have approved UKAS to accredit VET certification through an international standard.
- 5.4 E4E believes that kitemarking can be a means of signposting quality, but the DfE must ensure that it does not lead to the devaluation of accreditation and approval, as conducted by PEIs, or

the confusing duplication of quality markers. Engaging professional engineering bodies early in the planning of the kitemarking scheme would help mitigate these risks.

Delivery of higher technical education

6. Are the suggested criteria set out in paragraph 61 suitable markers of high-quality technical provision?

To what extent do you agree or disagree with the principle of the OfS applying technical ongoing registration conditions that a provider would be required to meet to indicate the high quality of their HTE provision? If you disagree, what could an alternative approach be?

- 6.1 The group welcomes expectations that teachers will have both occupational experience and high-quality pedagogical skills; these standards are ambitious in the current climate, with teachers currently going from teaching professions into industry (rather than the other way) and significant shortfalls in teacher recruitment. The DfE must back its ambition with a robust plan for the recruitment and retention of teachers with these skills into further and higher education otherwise the Government's laudable intentions in this regard will be undeliverable.
- 6.2 Employing suitably qualified and industry-experienced teachers (or supporting teachers to gain industrial experience, out of the classroom) and providing access to high-quality, up-to-date facilities and equipment will have high up-front and ongoing costs for providers, particularly those providing HTQs in engineering and technology. The DfE must ensure that providers are sufficiently supported, both financially and with guidance, to help them meet these aims.
- 6.3 Funding issues aside, access to 'facilities and equipment that are reflective of the workplace, including industry-relevant, up-to-date equipment', may be a significant challenge for many providers if they are not located near to employers or other institutions that can offer these facilities. E4E believes that access to such facilities is an important element of accredited engineering programmes and as such, the DfE must give further consideration to how HTQs can be delivered in areas of lower industrialisation (which may be exactly the areas where such qualifications are most needed to stimulate growth), should they not possess the required equipment.
- 6.4 If the HTQs are to be agile enough to adapt to new industrial technologies, rather than just what is up-to-date, then easy access to centres of innovation (such as the High Value Manufacturing Catapult) is key. The 12 new IOTs are identified within the consultation document as a means of delivering collaboration between colleges, universities and employers, but they are based in cities, leaving large rural cold spots.
- 6.5 More detail is needed on how teaching quality will be inspected and measured, particularly as there is an expectation that teachers will combine high-quality pedagogical skills with relevant occupational and industrial expertise. The OfS currently gives the HE institutions a high degree of autonomy over the delivery of their courses, with a focus on outcomes rather than approach, in order to facilitate innovative practices. The consultation document indicates that greater scrutiny will be applied to providers of HTQ. An ongoing technical registration process that is too rigid and bureaucratic may stifle innovative approaches to provision and potentially be off-putting and discourage providers from offering technical education alongside the academic provision they already offer. Since traditional HE providers already offer the most

widely recognised and well established model of education beyond level 3, it is critical to ensure that HTQs can capitalise on that success, rather than merely undermine it.

- 6.6 Given the repeated references to HTQs being employer-led, there should be a focus on the output of higher technical education, i.e. the employers receiving the students that they need, rather than just the quality of provider facilities and the industrial experience of the teachers. However, this must be balanced with the interests of the students in terms of acquiring flexible skills and attributes that support long-term careers in engineering rather than the immediate (and, by the time they are qualified, possibly out-dated) needs of employers.

7. To what extent do you agree or disagree that linking grant or capital funding to meeting the technical ongoing registration conditions would encourage providers to deliver high-quality provision?

- 7.1. With much of the FE sector currently struggling financially due to an extended period of underfunding, any financial incentive is likely to result in many of these institutions choosing to meet the registration conditions. It is also more likely that FE providers would opt for the grant funding rather than capital funding. Ultimately, the provision of unapproved and unfunded HTQs will become financially unviable, giving providers little choice.
- 7.2. A true assessment of local skills needs is a challenge, particularly as it needs to include the skills needs of employers of all sizes and sectors. It is, however, an important element in the development of HTQ provision that addresses regional skills shortages, felt most acutely by SMEs. Financial incentives could be offered to providers that offer provision that has explicitly been identified by LEPs, SAPs and similar organisations with knowledge of the local skills landscape.

8. To what extent do you agree or disagree that we should explore how providers that meet the ongoing registration conditions specific to Higher Technical Education could have access to a more competitive student finance package for courses leading to approved HTQs than those who do not meet the technical conditions? Why?

- 8.1 E4E welcomes any measures that successfully incentivises any provider to deliver high-quality HTE that is responsive to local skills demands and the needs of pupils. More detail is needed on the extent of provider's responsibility to deliver skills required by local industry and on the set of 'quality indicators' that will be used to determine the quality of HTE provision and the level of funding that providers will receive.
- 8.2 For these proposals to be implemented, they are reliant on the implementation of the funding recommendations relating to the expansion of qualifications for which learner funding is available as set out in the Augar Review. The group would like to see what alternative proposals the Department has if the recommendations from the Augar review are not implemented.
- 8.3 Providers must be given sufficient time and support to make the required reforms.

9. To what extent do you agree or disagree that additional non-financial support will be needed to enable providers to develop their workforce and engage fully with employers? What might examples of non-financial support be?

- 9.1 The consultation document mentions support for providers to help them grow their FE workforce and ensure that they have relevant pedagogies and relevant industrial experience. More detail is needed on the how the DfE and other organisations will grow the numbers of teachers and technical staff within FE, without a significant increase in funding.
- 9.2 While FE institutions offer many advantages as providers of HTQs, the Department should recognise that Level 4 and 5 qualifications are already taught effectively by HE institutions, sometimes as standalone qualifications, but more usually encompassed within Level 6 and 7 qualifications. Expansion of this capacity is necessary to ensure HTQs do not cannibalise degree-level qualifications, but it is likely to be easier and more cost effective to build on existing infrastructure, expertise and models of delivery rather than prioritise new channels of provision. Focusing on the development of HTQs alongside – and as part of – the delivery model for degree-level qualifications is consistent with the Augar Review’s welcome recommendation that there should be greater opportunities for students to move out of Level 6 courses with lower level qualifications where appropriate.
- 9.3 The work placements are identified as an important, ‘non-financial’ part of HTQs. This contradicts other parts of the consultation document which state that HTQs should be deliverable, if necessary, entirely as taught programmes within a classroom environment. Any well delivered placement is likely to require some financial and non-financial burden on the provider as well as the employer.
- 9.4 E4E believes it might be unrealistic to expect more support from employers when it comes to work placements as they are likely to prioritise apprenticeships where they will benefit more directly from the training of their own apprentice workforce rather than contributing to the wider enhancement of skills that their competitors will also be able to access. Employers are also likely to regard sponsored undergraduate schemes as a better deployment of their support, because, again, they benefit directly and degrees are already a well-established and recognised qualification.
- 9.5 Many PEIs already offer free student membership which allows access to free information, CPD and a support network.

Student and employer demand

10. To what extent do you agree that there is a need and opportunity for more young people and adults (including those who need to upskill/retrain) to be undertaking HTE in the future? Please provide examples from your own experience.

- 10.1 With 26% of people aged 16-24 with L3 as their highest qualification and low numbers starting L4/5, there is definitely a need to establish the reasons and barriers for them not progressing further. With 80% of the workforce of 2030 already out of the education system, there is also strong and growing need to provide support and guidance to those who need to upskill via HTQs.
- 10.2 Greater flexibility and ease of access (particularly geographically) is needed to higher technical qualifications to encourage those in work to retrain and upskill. More recognition is needed of the challenges that adults, particularly those from lower socioeconomic backgrounds, have in accessing higher technical education, particularly where there is a lack of communication about what is available and where there are geographical cold spots.

- 10.3 In addition, learners should be able to drop off courses having achieved certain levels. For example, if a student drops out of their undergraduate degree, they may well have learned enough for a level 4 or level 5 qualification. This would increase the chance of people re-engaging with education at a later stage.
- 10.4 Higher technical education should offer people the opportunity to progress beyond the programme originally enrolled and to achieve intermediate qualifications whilst progressing.

11. To what extent do you agree with these measures to improve the profile of HTE, as set out in paragraphs 87 to 97?

- 11.1 E4E believes it is essential that technical education has the equivalent levels of prestige to A levels and degrees. It believes that the reward system for schools, in terms of destinations, needs to be changed to acknowledge technical routes, rather than simply the number of students continuing their studies via a degree route at Oxbridge or other Russell Group universities.
- 11.2 Information, advice and guidance in the school system needs to improve and needs to be better enforced as there is a lack of awareness on the benefits of apprenticeships and technical education. This route needs to be considered as prestigious as the A level and traditional university routes. That said, it is important to recognise that university routes are now more diverse than ever and encompass apprenticeships and the provision of many technical and vocational qualifications. Information, advice and guidance needs to reflect better that the notion that academic or technical pathways are incompatible alternatives is not only out-dated but is holding back progress towards equivalence of prestige.
- 11.3 The current communication to pupils is dominated by the notion of completing A levels as a means to going to university. A stronger link must be made in the mind of pupils between A levels and a move into technical education, academic education or a mixture of both.
- 11.4 E4E agrees with the comments made in paragraph 91 of the consultation that the Government needs to create a strong brand around higher technical qualifications in the same way that companies like BAE and JCB have done for their apprenticeship schemes. The PEIs could have a crucial role to play in supporting the DfE in raising awareness of the technical routes.

12. To what extent do you agree with these measures, set out in paragraphs 100 – 112 to improve IAG for young people, adults and employers?

- 12.1 The consultation document is right to raise the issue of careers advice as it will be an essential part of any successful promotion of HTQs. Despite the introduction of the Gatsby benchmarks and the Baker Clause, evidence indicates that many schools are still failing to comply with these regulations. Schools that have a financial incentive to retain their pupils or that are subject to performance metrics (such as league tables) that take narrow account of progression to (selective) universities will be compromised in their promotion of all routes equally. In raising the profile of HTQs, the DfE must do more to ensure that schools are actively promoting these routes to their pupils and can access qualified and professional careers practitioners.

- 12.2 Clear and consistent labelling of the new qualifications will be key to ensuring that leavers, parents and employers understand and value them. In order to ensure that the currency of these qualifications is understood, they should be positioned as subjects rather than occupations.
- 12.3 The extent of upskilling required to deliver the quantity of skilled engineers needed by the UK requires the engagement of employers of all sizes, nationwide. The current suggestion that training should take place within the classroom as a taught programme may discourage smaller employers from committing staff to HTQs. Greater flexibility to allow people to complete training either in the classroom or within a work environment should be considered.

ⁱ 2019 Data tables, EngineeringUK. <https://www.engineeringuk.com/research/data/>

ⁱⁱ *Mapping the Higher Technical Landscape*, RCU, 2018.

ⁱⁱⁱ 2019 Data tables, EngineeringUK. <https://www.engineeringuk.com/research/data/>

^{iv} TBC