



Enginuity

ENGINEERING & MANUFACTURING APPRENTICESHIPS

Thought Leadership Series: Paper 1

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FIT FOR THE FUTURE

Lord Knight and Lord Willetts, in partnership with Engineering UK, are currently leading an inquiry to uncover the reasons behind the decline in Engineering and Manufacturing (E&M) apprenticeships starts. Details of the inquiry and the call for evidence are available at: <https://www.engineeringuk.com/research-policy/fit-for-the-future-growing-and-sustaining-engineering-and-technology-apprenticeships-for-young-people/>

This paper includes some background information and thoughts on E&M apprenticeships to assist stakeholders prepare their responses to the inquiry's call for evidence.

Apprenticeships are still valued in Engineering and Manufacturing

Apprenticeships have always been the foundation of training in the E&M sector in the UK and are still valued across the sector today. They have given generations of people the chance to learn, build, make, and create, while meeting their professional and personal goals.

There are a huge number of vacancies in the E&M sector with rich and rewarding careers which start with a quality E&M apprenticeship. The apprenticeship system in England has seen a great deal of change over the last few years, but E&M apprenticeships have some of the lowest drop-out rates¹, while a study by Gatsby found that all the engineering companies they examined had comprehensive on-the-job training as part of high-quality apprenticeships.² In this paper we look at:

- Data trends in E&M apprenticeships in England,
- Enginuity's work on apprenticeships in England, and
- Why we need to improve the pipeline for apprenticeships and vocational education.

We conclude with nine ideas for improving apprenticeships in England. While this paper is focussed on England, we plan to share our thoughts on the apprenticeship systems in Scotland, Wales, and Northern Ireland, in future papers in this Thought Leadership series.

¹ Cavaglia, Chiara, Sandra McNally and Guglielmo Ventura, *The Recent Evolution of Apprenticeships*, The Sutton Trust, December 2022, page 33.

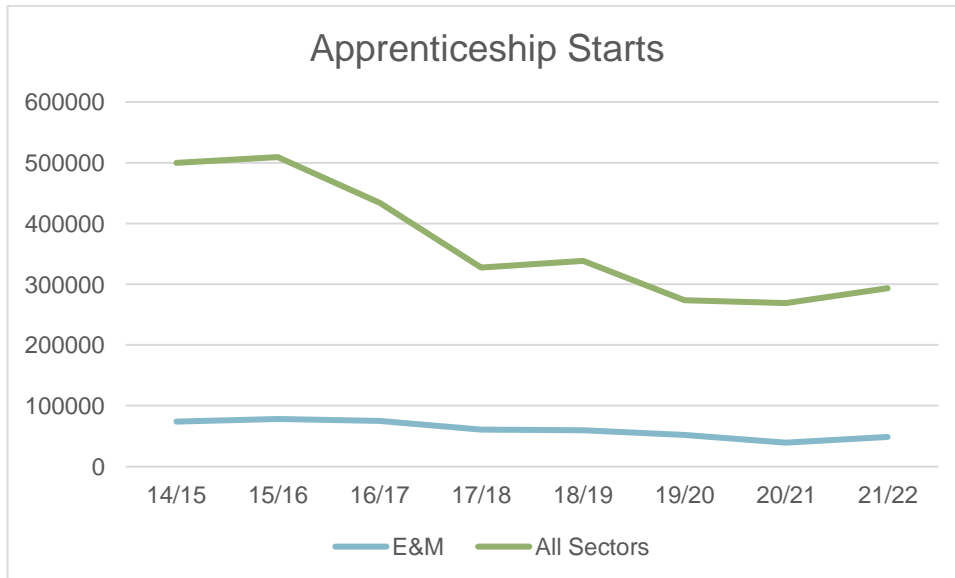
² Gatsby, *On- and off- the Job Training in Apprenticeships in England*, p. 12-16.



Trends in E&M apprenticeships in England

Apprenticeship starts

Overall apprenticeship numbers have fallen since 2015/16. E&M has followed the decline, but less steeply than the average. Both All Sectors and E&M experienced a positive bounce in 2021/22 as the economy began to re-open from the Covid pandemic.



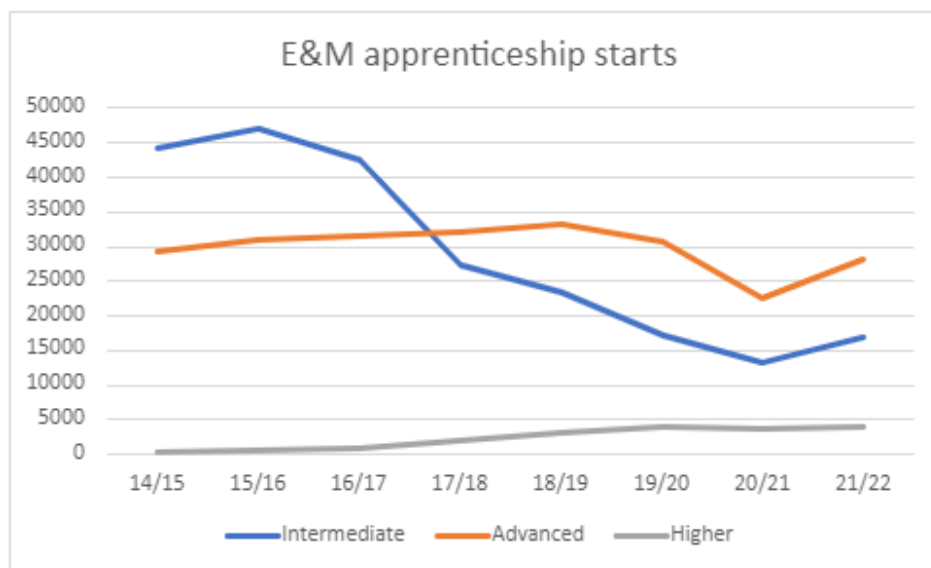
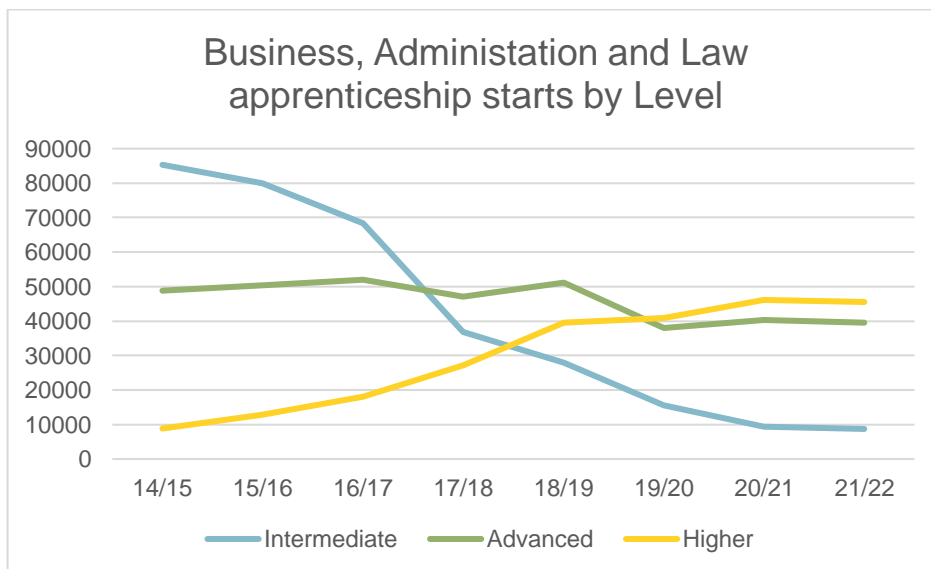
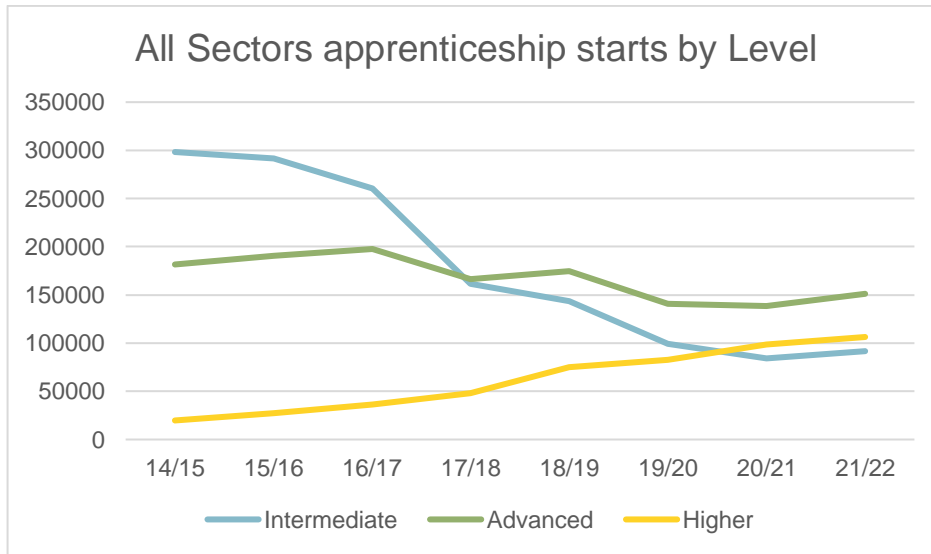
Source: DfE Apprenticeships and traineeships statistics

An expanded role for apprenticeships

Under frameworks, apprentices generally progressed through the Levels. This is evident in the graphs below which show Level 2 predominating across sectors in 2014/15, with significant Level 3 apprenticeships, and few apprenticeships above Level 3. Under standards, each apprenticeship is an occupation in its own right, rather than a progression in skill level. Since the introduction of standards and the apprenticeship levy, there has been a significant fall in Level 2 apprenticeships and an increase in higher apprenticeships, with Level 3 apprenticeships remaining relatively stable.

In the graphics below, Intermediate refers to Level 2, Advanced to Level 3, and Higher to Levels 4-7.





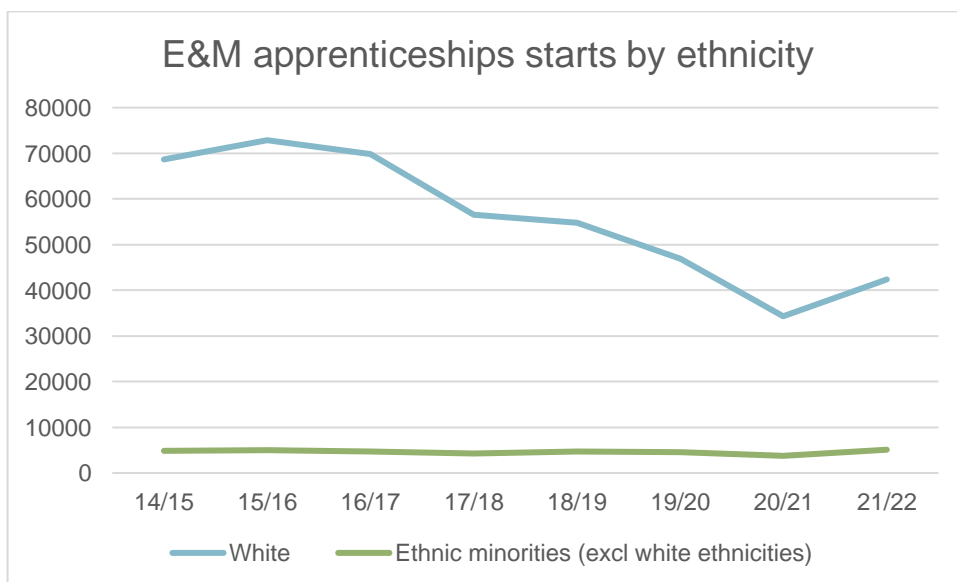
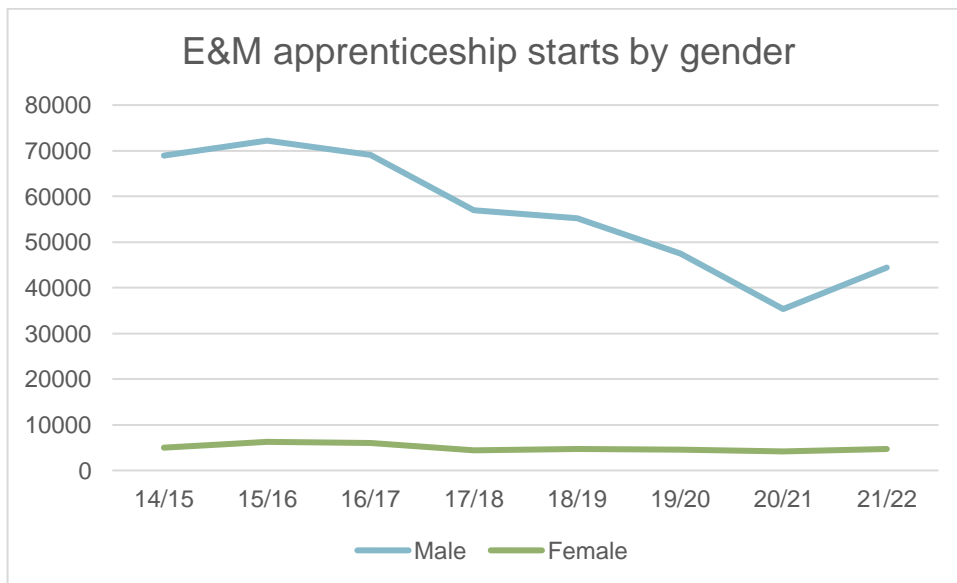
Source: DfE Apprenticeships and traineeships statistics

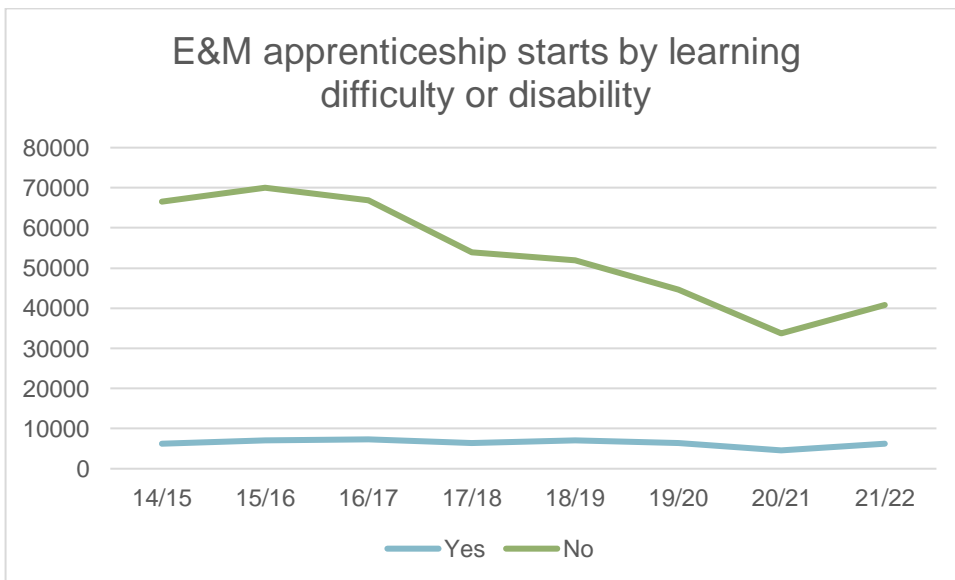
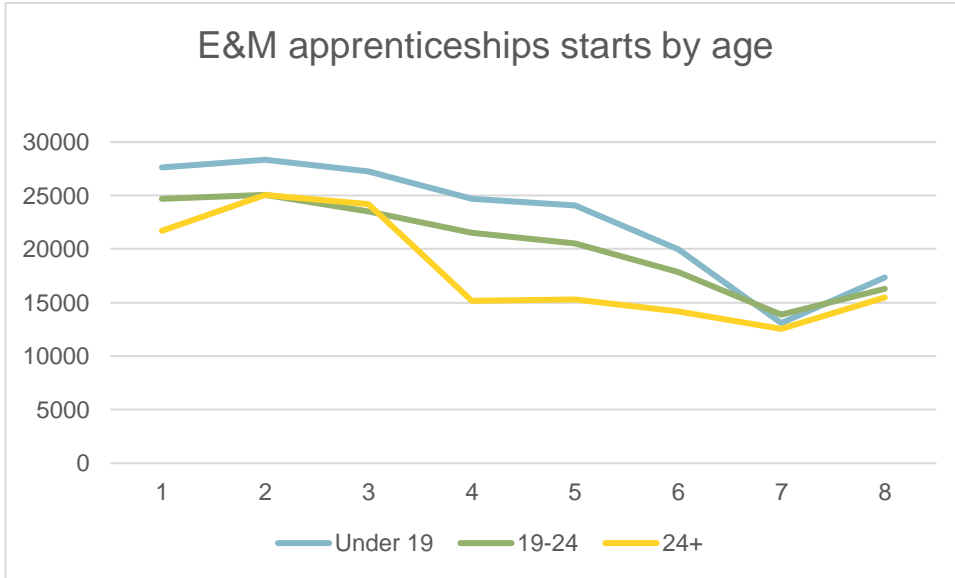


Demographics

Overall, the outcome of efforts to increase the numbers of E&M apprenticeships held by females and members of ethnic minorities (excluding white ethnic minorities) have been disappointing, with intakes of both groups remaining generally stable since 2014/15. At the same time, the number of white males entering E&M apprenticeships has declined significantly.

E&M apprenticeships have declined relatively uniformly across age groups, with slightly greater falls among participants under 19. The percentage of participants in E&M apprenticeships who indicate they have a learning difficulty or disability has increased.



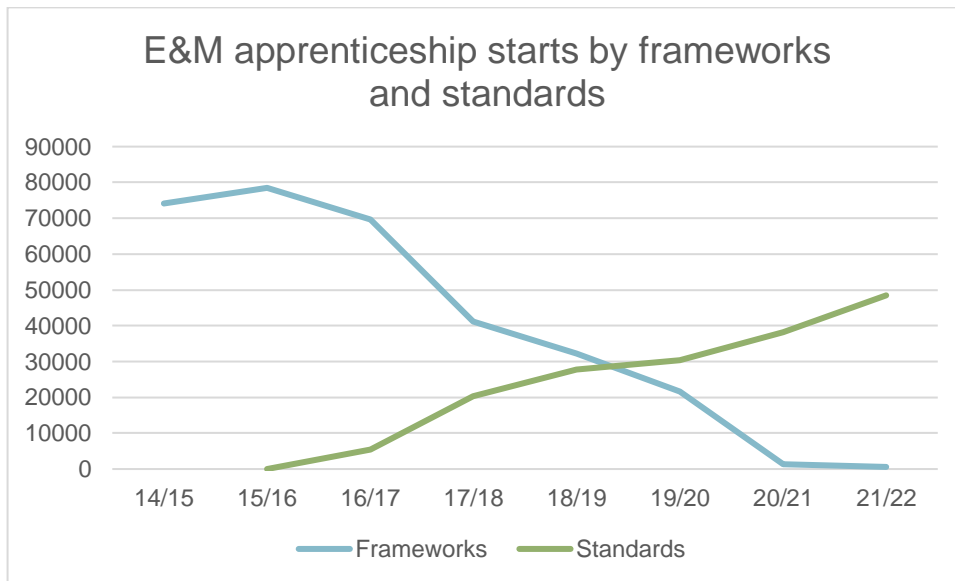


Source: DfE Apprenticeships and traineeships statistics



Apprenticeship frameworks versus standards

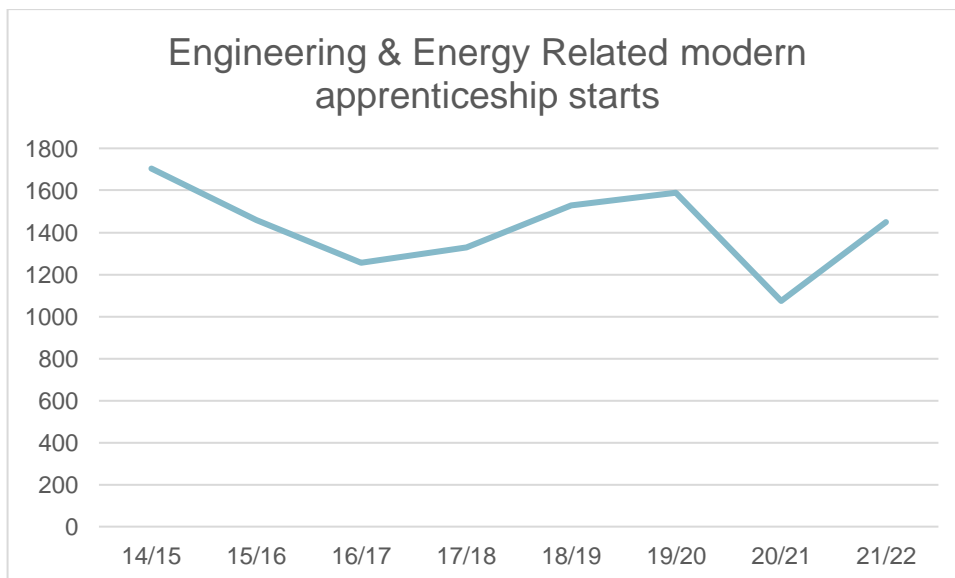
Starts in E&M apprenticeship standards have not kept pace with the removal of frameworks.



Source: DfE Apprenticeships and traineeships statistics

Trends in Engineering and Energy Related apprenticeships in Scotland

In Scotland, where there has been no move away from frameworks, starts in Engineering and Energy Related modern apprenticeships have remained relatively stable.

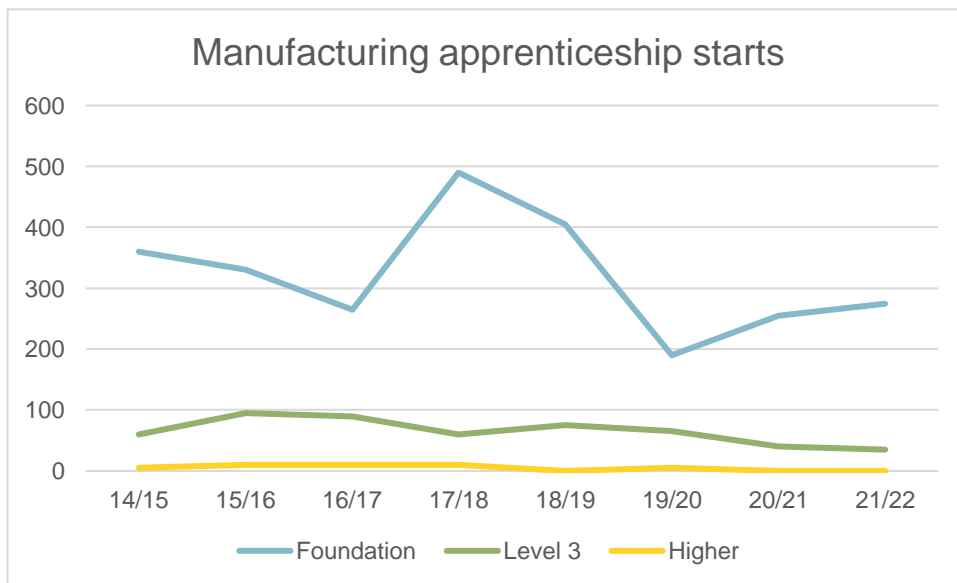
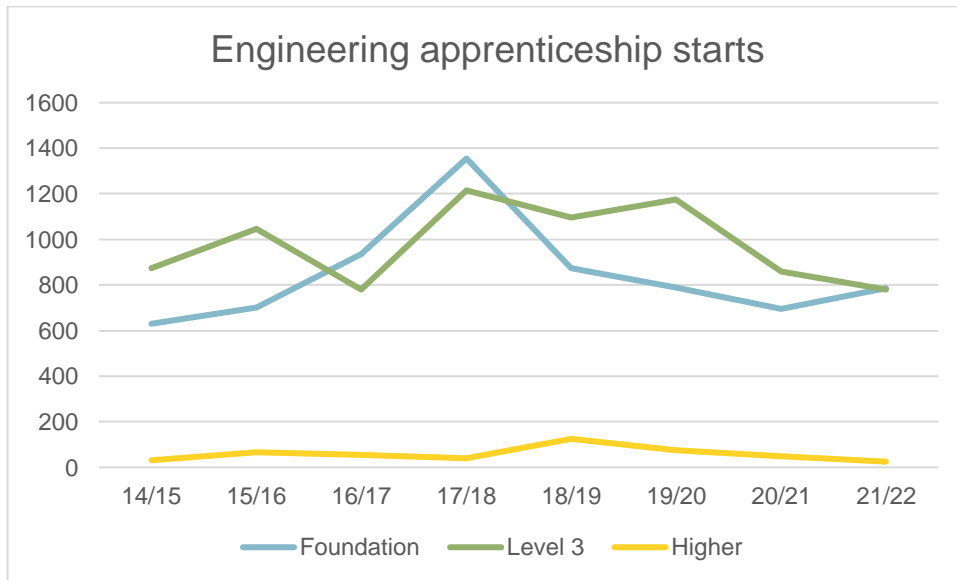


Source: Skills Development Scotland statistics



Trends in E&M apprenticeships in Wales

Wales has maintained a more traditional apprenticeship system, with a continued focus on lower Levels. In the graphics below, Foundation refers to Level 2 and Higher to Levels 4 and above.



Sources StatsWales apprenticeship statistics

ENGINUITY'S WORK IN ENGLAND

Apprenticeship route review in England

Enginuity was commissioned by the Institute for Apprenticeships and Technical Education (IfATE) back in 2019 to work on the route review for the Engineering and Manufacturing route. The aim of the route review was to ensure that all of the occupational standards included in the review provide the training needed by the sector for its current and future workforce.

The route review provided an opportunity for employers, providers, stakeholders and apprentices to tell IfATE about the technical qualifications and skills they need, now and in the future.

Enginuity held a series of external virtual and regional workshops and prepared a report for IfATE setting out the priorities for the sector. The three top priorities set out in the report are:

- Flexibility to respond to the pace of change,
- Simple and steady changes to avoid breaking the system, and
- Provide a definitive statement about the role of qualifications.

Three T Levels for Engineering and Manufacturing aligned to the occupational standards were introduced in September 2022:

- Design and development,
- Manufacturing, processing and control, and
- Maintenance, installation and repair.

It is still very early days for these T Levels and Enginuity is committed to working with DfE and partners to ensure employers are aware of and able to access T Level graduates as well as hosting work placements.

Apprenticeship standards in England

EAL supports the Trailblazer groups as they develop new apprenticeship standards for England. EAL sits on the Trailblazer groups, assists with the consultation with employers and looks to connect different parts of the sector. There are some interesting new standards in development including standards related to mechatronics and aerospace.

The most popular standards for EAL in the last year were Engineering Technician, Maintenance Engineering Operations Technician, Product Design and Development Engineer, Engineering Operative, and Manufacturing Engineer.



IMPROVING THE PIPELINE FOR APPRENTICESHIPS AND VOCATIONAL EDUCATION

STEM careers advice

We can materially improve the pipeline for apprenticeships and vocational education by providing children with effective careers advice. Evidence suggests that there is still not enough focus on the provision of STEM careers advice in schools and enough understanding among both teachers and learners of the educational and careers options available in STEM. In particular, learners are not sufficiently aware of the immediate and longer-term benefits of apprenticeships and vocational training, with higher education remaining a default choice for many learners and parents.

Enginuity recently commissioned a UK-wide study from CHILDWISE, a leading specialist in research with children and young people, on the use of STEM careers materials in schools. The evidence suggests that teachers of learners aged 11-14 need support to incorporate STEM careers advice into their lessons. Among the STEM teachers (of 11–14-year-olds) surveyed by CHILDWISE, 41% felt they did not know enough to help students who asked for advice about a career in engineering. They also expected most of their students to know only a little (76%) or nothing (18%) about potential careers in engineering. Only 30% regularly incorporated information about possible STEM careers into their lessons, with 51% occasionally and 19% rarely doing so. Although lack of time was the most common reason for this (52%), 26% indicated they did not know enough about it, and 18% that they did not know where to find it.

Most of the children (aged 11-14) surveyed said they knew only a little (46%), nothing at all (36%), or didn't know (10%), about careers in engineering, with only 8% knowing a lot. 63% said they would not be interested in a career in engineering, with concerns about its being boring, as well as too hard, too dirty, and not creative or well paid enough. These findings are particularly significant given how early career ambitions seem to form with 37% of surveyed children (11-14) knowing, and 45% having some idea of, what sort of job they wanted to do when they were older. This indicates the importance of engaging school children, including at primary school, with engineering and technology, and providing them with relevant, accessible and inspiring STEM careers advice.

It is important for STEM careers advice materials and tools to be designed to be inspiring, engaging and accessible to a diverse range of learners, and to overcome existing barriers to engagement, especially for marginalised and under-represented groups. For example, the Enginuity/Childwise research found that girls say they know less about, and are four times less likely to be interested in, an engineering career than boys.



Skills Miner and interactive careers maps

Enginuity is developing tools to connect with children to inspire and engage them with an understanding of the range of rich and diverse career opportunities available in Engineering and Manufacturing. As part of this work, Enginuity has launched Skills Miner, an educational game using the Minecraft platform, which provides an accessible way for children to uncover engineering skills through gameplay and exploration. Skills Miner has been designed to be used as a stand-alone STEM careers tool to support the provision of STEM careers advice in schools without a full STEM careers programme. Further details are available at <https://enginuity.org/innovation-lab/skills-miner/>

We are also developing digital interactive careers maps, including a cityscape where young people can navigate through a city exploring zones dedicated to different careers within Engineering and Manufacturing. In each zone, the user will be able to access engaging and inspiring careers information, including role models, role profiles, case studies and, where relevant, a skills miner game.

This is Engineering

The *This is Engineering* programme³, led by the Royal Academy of Engineering, is a great example of an initiative making a positive and measurable impact. *This is Engineering* is a campaign to bring engineering to life for young people and give more people the opportunity to pursue a rewarding and well-paid career which gives them the chance to shape the future.

The campaign provides a wide range of accessible and engaging information on engineering careers, such as inspirational profiles of engineering heroes and current engineers and a virtual museum of engineering innovation, with a focus on exciting, cutting-edge industries. The campaign's website also offers accessible guidance on the educational and vocational pathways into engineering careers.

All of the above leads us to propose:

SEVEN IDEAS FOR IMPROVEMENT IN E&M APPRENTICESHIPS IN ENGLAND

Focus 1: Respect for technical skills

Everyone agrees that parity of esteem between academic and vocational education is key to improving the apprenticeship system and increasing the number and quality of participants. The problem is that we are not taking effective steps to create that parity. Schools are still incentivised to promote academic routes to their students, who will benefit from greater

³ <https://www.thisisengineering.org.uk/more-info/about-us/>



funding if they take their school's advice. It is vital that incentives are built into the system to help achieve parity of esteem.

Focus 2: Levelling up

The structure of the apprenticeship system has changed significantly since 2014/15, when Level 2 apprenticeships predominated with many Level 3 apprenticeships, and relatively few apprenticeships above Level 3. The structure of the apprenticeship system overall has significantly changed with apprenticeships above Level 3 rising and apprenticeships at Level 2 declining. This trend is particularly evident in the BA&L sector. E&M apprenticeships still maintain a core of apprenticeships at Levels 2 and 3.

The apprenticeship system and its funding are increasingly being used to support training at a higher level. Providing funding at all Levels is a great development but it is really important to maintain a strong focus on the flow of apprentices joining the sector at Level 2 and 3, even as we expand the purpose of apprenticeships to embrace degree-level studies.

Focus 3: Energising the Levy

The benefit to employers and workers of reforming the apprenticeship levy to support flexible training using modular qualifications, and making levy transfers easier, is widely accepted by most stakeholders outside Westminster. Such reform may also lead to a better balanced distribution of apprenticeship investment within and across sectors. We call on policymakers to reform the Apprenticeship Levy so that it supports flexible training beyond the existing standards. Transferring Levy funds throughout the supply chain must be simplified.

Focus 4: Data is King

There is really no reason why data on apprenticeship expenditure should not be published in a timely manner, by Level and SSA Tier 1 and 2 at the very least. Better and more timely data on apprenticeship expenditure, including the expenditure of unused and expired levy funds, would greatly help inform sectoral discussions and assist in planning and problem resolution.

It is also unfortunate that we do not have adequate outcome and destination data on E&M apprenticeships. This inhibits good policymaking and robs the sector of a key promotional tool. Anecdotal accounts suggest that the rich and rewarding outcomes provided by E&M apprenticeships match and often better the outcomes from academic routes.

Focus 5: Opening doors

The disappointing data on the participation of under-represented groups in E&M apprenticeships, as well as an apparent declining interest among white males, clearly demonstrates the need for new and more imaginative approaches to promote apprenticeships. Industry is keen to have a re-energised partnership with government in this area, especially to imaginatively recruit under-represented groups to apprenticeships and T Levels.



To ensure we get it right, we need to understand why the current promotional activities targeting under-represented groups do not seem to be working and the reasons for the falls in participation by white males. We can then make sure that we are using effective methods to promote the benefits of E&M apprenticeships and T Levels.

We also need to improve the information available to potential participants in E&M apprenticeship and provide better pastoral care once they have entered an apprenticeship. There needs to be better information on the pathways to progression to motivate participation and encourage social mobility.

This also means better processes to support recruitment into apprenticeships using innovative methods, such as Enginuity's gamification tools, to reach young people who find traditional application processes challenging or alienating. And we need to ensure that once they show an interest, that interest is captured by processes such as the apprenticeship clearing house pilot being developed by the Solent Apprenticeship Hub, the Royal Navy Maritime Enterprise Zone, UCAS, and Enginuity. The clearing house will match people who have applied unsuccessfully for apprenticeships at Primes to apprenticeship opportunities in SMEs.

Focus 6: Fair wage for all

We need to look again at the financial incentives for apprentices, especially at Levels 2 and 3. Businesses need to ensure that they are paying apprentices a fair rate. In particular, no business should use the apprenticeship system to pay under the minimum wage. However, government also has a role in ensuring apprentices have sufficient financial incentives. There should be money for this if we are serious about parity of esteem.

Focus 7: Essential skills

The percentage of E&M apprenticeship participants with learning difficulties or disabilities is increasing. This data confirms anecdotal evidence from employers on the large number of apprenticeship participants who need remedial support in English and mathematics. This is creating a barrier to E&M apprenticeships, as employers should not, and in many cases, cannot take on this cost without government support.

