

THE  TIMES
GUIDE TO
ELITE
APPRENTICESHIPS

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**How to get the best placement
with the country's top employers**



The smart way to get hands-on experience and stay debt-free

ROSEMARY BENNETT
EDUCATION EDITOR

Enthusiasm for elite apprenticeships has never been greater. The row over tuition fees has put universities under some much-needed scrutiny and raised questions about whether degrees are really providing value for money.

Teachers, parents and school-leavers are rightly starting to ask why there are so few alternatives to a £27,000 qualification with no guarantee of a job at the end of it.

Companies are increasingly unhappy with the lack of work experience and poorly developed “soft skills” of new graduates.

Higher and degree-level apprenticeships are the answer they are all looking for, but they are still disappointingly low in number. While 240,000 young people started university last September, 2,100 18-year-olds started higher apprenticeships. More than 36,000 higher apprenticeships were taken up last year, but fewer than 10 per cent were school-leavers.

Yet the attractions are so obvious. For employers, they are a chance to grab the talent early and train them for roles

they know they will need to fill in a few years’ time.

School-leavers get experience of work, putting them ahead of their undergraduate contemporaries by the time they graduate. They get a salary and an academic or professional qualification, and, crucially, no £50,000 of debt at the end of it.

WHY ARE THE NUMBERS SO SMALL? University, despite its significant cost, is still the default option for ambitious school-leavers, with the lure of freedom, fun and three more years of full-time study. Read on and you will see that parents are a significant stumbling block, fearful that their children’s careers will suffer if they do not have a “normal degree”.

Smart companies that are determined to make higher apprenticeships work for this age group are trying to offer their recruits the best of both worlds. They have teamed up with universities to let entrants study alongside other undergraduates, doing their work experience in the holidays to build them into the professional workers the companies need.

In a scheme widely viewed as a game-changer for the sector, PwC, the

accountancy firm, has partnered with the universities of Birmingham, Leeds and Queens, Belfast, to create a new, full-salaried, four-year digital degree apprenticeship for 100 students a year, starting in September.

It is one of the first and largest examples of the new level 6 degree apprenticeship. Those meeting performance criteria will earn a degree in computer science and a job at PwC. Look out for more of these.

The second change is even more profound. One of the big obstacles for companies is the considerable cost of this sort of training. However, the apprenticeship levy is now in operation. Introduced in April, it requires businesses with an annual wage bill of £3 million or more to pay 0.5 per cent of their payroll costs into an apprenticeship fund. Employers can draw on the fund to help cover the cost of their own training, as long as they do so within two years of making a contribution.

Before the levy was introduced, it was up to businesses how much they spent on apprenticeships, and costs were not recovered from the government. Now they have a clear incentive to increase their investment.

There has been no mad dash to set up new schemes, but things are starting to change. Some of the biggest employers have said publicly that they are going to reduce the number of graduate entry programmes and increase the number of recruits in higher apprenticeships.

EY, the accountant (formerly Ernst & Young), will be taking on 850 graduates, down by 50 from last year. The number of apprenticeships is up by 50 to 250. Our table (far right) shows that Civil Service Fast Track is again the largest recruiter of higher apprentices, with more than 900. Recruits can choose from streams of training, ranging from finance to project delivery to technology.

Other large investors in higher apprenticeships are Jaguar Land Rover, Capgemini, whose first degree apprentices completed their programmes last summer, and JP Morgan, one of the biggest banking recruiters.

CASE STUDY

Apprenticeships may have a reputation as training people to work in technical fields such as engineering or construction, writes **Andrew Ellson**, but there are other avenues.

Several retailers offer schemes to help young people to develop into store managers and commercial leaders.

Marks & Spencer has been running an apprenticeship scheme for 40 years and now offers a level 4 retail management standard.

Apprentices earn £18,000 a year — or £21,000 in London — rising to £26,000 at the end of the scheme. The programme lasts up to 18 months, after which apprentices become commercial managers. **Helen Alkin**, a

recruitment manager at M&S, said: “A degree is not the be-all and end-all for young people as it once was — far from it. An M&S apprenticeship is a fantastic opportunity to develop skills for life. You’ll be doing a real job from the start, learning from experienced people around you and studying for a nationally recognised qualification, which you can complete in normal working hours.”

In the first seven months apprentices are supported by a mentor and learn the dynamics of the customer assistant and section manager roles. For the next ten months they receive management training. **Alkin** said: “Apprentices get to manage multimillion-pound budgets. They will learn the art of leadership and people management.”



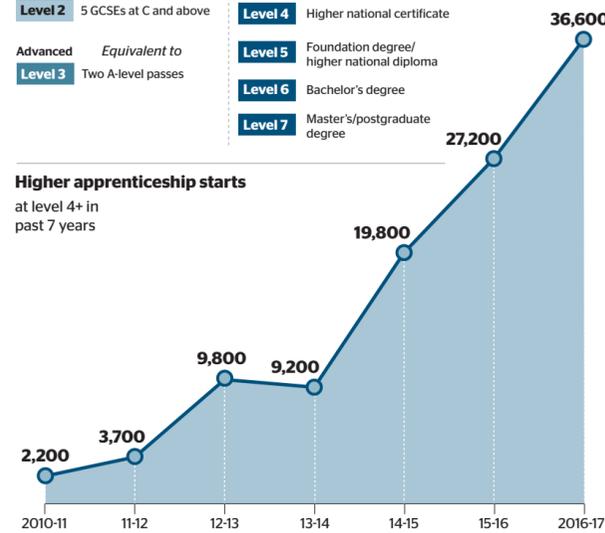
Top and above: M&S has been running an apprentice scheme for 40 years

The system explained

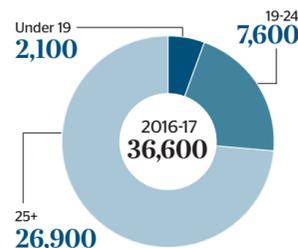
Intermediate	Equivalent to	Higher	Equivalent to
Level 2	5 GCSEs at C and above	Level 4	Higher national certificate
Advanced	Equivalent to	Level 5	Foundation degree/ higher national diploma
Level 3	Two A-level passes	Level 6	Bachelor’s degree
		Level 7	Master’s/postgraduate degree

Higher apprenticeship starts

at level 4+ in past 7 years



Higher level apprenticeships breakdown by age



Source: Department for Education

Graduate salaries

Six months after university	£21,000
3½ years after university	£27,000

Source: HESA

Higher apprentices’ salaries

One year after completion	£27,200
Two years after completion	£27,700

Source: Longitudinal Educational Outcomes

The Times guide to higher and degree apprenticeships

Available programmes	Typical roles	Starting salary	Length of training	Recruits in 2017
Civil Service Public sector	Business, commercial, finance, digital & technology, project delivery	£19,500-£22,000	2 years	974
BAE Systems Engineering & industrial	Engineering, finance, software development, project management	£11,900-£17,500	4-5 years	314
PwC Accounting & professional services	Assurance, consulting, deals, tax, technology	Competitive	2-4 years	285
Deloitte Accounting & prof services	Audit, consulting, financial advisory, risk, technology	Competitive	15 months-4 years	274
KPMG Accounting & prof services	Audit, tax, advisory	Competitive	3-6 years	236
Army Armed forces	Engineering, intelligence, leadership, medical services	£14,900-£25,900	2-4 years	204
EY Accounting & prof services	Assurance, consulting, tax, transactions	Up to £21,500	3 years	182
Jaguar Land Rover Engineering & industrial	Engineering, finance & accountancy	£18,500	6 years	133
BT IT & telecommunications	IT, engineering, HR, sales, business management, finance, cybersecurity	£13,000-£19,000	18 months-4 years	125
Rolls-Royce Engineering & industrial	Finance, engineering, manufacturing, project management, supply chain, science	£12,600-£15,300	3-4½ years	108
Royal Navy Armed forces	Royal Navy officer, engineering officer, submarine nuclear & weapon engineering	Up to £5,500 bursary a year (SD), £31,000 (DA)	3-4 year degree, 7½ years (DA)	105
Lloyds Banking Group Banking & finance	Banking, customer operations, finance, IT, business management	£15,000-£23,300	2-3 years	102
GCHQ Public sector	Cybersecurity, software engineering	£17,900	3 years	c.95*
Network Rail Public sector	Railway engineering, applied engineering	Varies	3-4 years	85
JP Morgan Investment banking	Financial services, technology	Competitive	18 months-4 years	76
Barclays Banking & finance	Finance, internal audit, leadership, relationship management	Competitive	18 months-3 years	72
Accenture Consulting & technology	Operations, software engineering	Competitive	3-4 years	65
Grant Thornton Accounting & prof services	Audit, tax, advisory	Competitive	5 years	65
Tesco Retailing	Buying, merchandising, sales, project management	£20,000	3 years	63
Laing O’Rourke Construction	Engineering, quantity surveying, procurement, planning, construction management	Competitive	5 years	62
Marks & Spencer Retailing	Retail management, solicitor	£18,000-£20,000	12-18 months (HA), 6 years (DA)	56
Sellafield Engineering & industrial	Nuclear engineering & science, project management	£14,900	3-4 years	55
Transport for London Public sector	Engineering, finance, general management, human resources, building services, cybersecurity	£17,800	2-4 years	55
BDO Accounting & prof services	Audit, tax, advisory, financial services	Competitive	4 years	54
GSK Chemical & pharmaceuticals	Manufacturing, laboratory scientist, technology, engineering, finance, supply chain, sales	Competitive	2-4 years	53
IBM Consulting & technology	Digital & technology solutions, business management, software development, management consultant	Competitive	3 years	50
AECOM Engineering & industrial	Engineering, building services, quantity surveying, construction	Competitive	2-5 years	46
Capgemini Consulting & technology	Software development, consulting, cybersecurity, business analyst, project management	£16,000	18 months (HA), 4½ years (DA)	46
Siemens Engineering & industrial	Engineering, technology, manufacturing, finance, sales	Competitive	2-4 years	45
Santander Banking & finance	Digital technology, human resources, finance	£17,000	2-4 years	44
Thales Engineering & industrial	Engineering, manufacturing, electronic systems, procurement, project planning	Competitive	3-5 years	42
CGI Consulting & technology	Software development, project management, business intelligence, cybersecurity	£14,600	2-4 years	41
GE Engineering & industrial	Engineering, technology	Competitive	3-5 years	39
Willis Towers Watson Professional services	Actuarial work, accounting, insurance	Competitive	2-3 years	39
Arcadis Design & consulting	Quantity surveying, engineering, project management	£12,000-£18,000	2-5 years	36
Airbus Engineering & industrial	Engineering, technology, finance, business management	Competitive	3-4 years	35
Atkins Engineering & industrial	Engineering, programme management, technology, surveying	£12,500-£16,000	4-5 years	34
Unilever Consumer goods	IT, project management, engineering, research & development	Competitive	2-3 years	33
Dyson Engineering & industrial	Engineering	Competitive	4 years	33
Sky Media	Technology, business, journalism	Competitive	2 years	33
WSP Design & consulting	Building services, engineering, design, project management	Competitive	3 years	31
National Grid Utilities	Engineering, project management, cybersecurity, commercial	Competitive	2-3 years	30
Balfour Beatty Construction	Engineering, construction manager, quantity surveyor	Competitive	2 years	30
BBC Media	Business management, software engineering, broadcast engineering, cybersecurity	£12,500-£17,000	18 months-4 years	27
Nestlé Consumer goods	Business management, operations, human resources, finance	£16,000-£17,000	2-3 years	25
Vodafone IT & telecommunications	Technology	Competitive	2-4 years	21
Virgin Media IT & telecommunications	Engineering, technology, legal	£17,500-£19,000	18 months-4½ years	18
Boots Retailing	Supply chain, finance, marketing, engineering, science	Competitive	2 years	17
Cisco IT & telecommunications	Technology	Competitive	3 years	16
Mace Construction	Engineering, project management, quantity surveying	Competitive	18 months-5 years	16

HA higher apprenticeship DA degree apprenticeship SD sponsored degree SLP school-leavers programme *2018 vacancies Copyright High Fliers Research

To produce *The Times* Guide to Higher & Degree Apprenticeships, the independent market research company High Fliers Research contacted more than 250 employers of school-leavers, graduates and young professionals during December 2017.

The research identified how many higher or degree apprentices each

organisation recruited in the previous 12 months on courses that lead to level 4 qualifications or above. Employers who offer training schemes outside the apprenticeship frameworks by sponsoring places on existing undergraduate courses; providing their own degree courses at university; or through programmes leading to professional qualifications

were included. Advanced or intermediate apprenticeships aimed at 16-plus school-leavers, which lead to level 2 or 3 qualifications, have not been included. The 50 organisations that recruited the most sixth-form school-leavers for higher or degree apprenticeships, or comparable schemes, took on more than 4,600 trainees in 2017.

Why university is not the only option

ALICE THOMSON

What a difference a year makes. In January 2017 Britain was lauding the creation of a government levy to fund the revival of apprenticeships. Now, 12 months on, there has been a sharp fall in apprenticeship numbers; employers are fed up with the scheme; and most young people are opting either for university or a job with no training. So was the push for apprenticeships a mistake?

My great grandfather, JJ Thomson, had been destined for an apprenticeship in 1880 in Manchester, but his father died and his mother couldn't afford to pay for him to train as an engineer. Instead, he went to Cambridge University to study maths. In his case, this was a lucky break; he became a physicist and discovered the electron.

Back then, for most of his contemporaries, an apprenticeship was a far better career choice than a degree, and there were 340,000 of them a year available by the start of the 20th century.

But then their long decline began, as they were pushed aside by degrees. By 1999, there were only 59,000 available a year. Despite the cost of a degree rising sharply — young people will leave university with average debt of more than £50,000, according to the Institute for Fiscal Studies — its value has not, with an increasing proportion of graduates failing to find jobs that match their education.

So the government's ambition of three million apprenticeships by 2020, funded by a new levy on larger employers, seemed to offer young people new choices while helping to tackle Britain's chronic skills shortage.

Instead, in the first year of the scheme, there was a 49 per cent fall in the number of apprenticeships, with 48,000 people starting one in the last three months of the educational year to July 2017, compared with 117,800 in 2016. Employers

blame this catastrophic drop on bureaucracy; EEF, the manufacturers' organisation, says that "employers have struggled to get their heads round the complex rules and restrictions in accessing funds".

Larger employers resent paying the levy, smaller employers find that the red tape puts them off accessing it. They are also finding it safer to use the levy cash to train existing staff, branding even MBAs for executives an "apprenticeship". Rather than spend the money creating schemes for youngsters who might never apply or prove unreliable when they do, because they have never had a job before, they argue.

The apprenticeships that do exist are hard to find. Paul Johnson, the director of the Institute for Fiscal Studies, made waves when he wrote in *The Times* this month about his struggle to find out about apprenticeships for his son.

"I spent a large part of the Christmas holidays helping him to apply for higher and degree-level apprenticeships," he wrote. "It is staggeringly hard even to find the right opportunities."

Sir Peter Lampl of the Sutton Trust has another worry. In November he said: "It is very concerning that people from low and moderate-income backgrounds are much less likely than their peers to take up high-quality apprenticeships."

So there are significant problems, but none of this means we should give up on apprenticeships. Too many universities deliver poor-quality degrees that don't translate into better jobs after graduation; apprenticeships are the answer. But the government's scheme is doing more harm than good, damaging the reputation of apprenticeships and undermining employer goodwill.

Anne Milton, the minister responsible, who didn't go to university and says her current appointment "fits me like a glove", needs to turn this policy around now — it is too important to be allowed to fail.



CASE STUDY

Alex Hills, above, has had a passion for vintage clothing since his teens, writes Emma Lee-Potter. He collected menswear from the 1920s and 1930s and started making his own clothes at the age of 17. After taking AS levels in history, fine art, archaeology and politics at Bexhill College in Bexhill-on-Sea, East Sussex, he considered studying for

a degree in bespoke tailoring at the London College of Fashion but had second thoughts. "I was going to be [part of] the first year to pay £9,000 a year tuition fees, so I applied to do a bespoke tailoring course at Newham College in east London instead," he says.

Hills, 23, was halfway through his level 3 qualification at the college when he got the chance to do a level 3 apprenticeship in coat making at Dege & Skinner, a family-run bespoke tailor in Savile

Row in London. The company has been dressing members of the royal family and the military for more than 150 years.

Hills completed his coat-making apprenticeship in 2016 and has embarked on a level 5 cutting apprenticeship, learning from the company's head cutter, Nicholas De'Ath.

"I went from being taught in a class of 20 at college to having one-to-one tuition every day," says Hills, who was a finalist in the

2017 Golden Shears award, a national competition for tailoring students and apprentices.

"One day I might be cutting out an ordinary worsted suit, the next I might be cutting out a uniform for the Yeomen of the Guard. I feel very proud when I see someone wearing a suit I've helped to make.

"In maths classes at school I used to ask, 'When am I ever going to use this?' but in this job you do. I've realised that there are practical applications for maths."



JP Morgan has extended its apprenticeship programme to its offices in Canary Wharf

Employer levy concern must be addressed

MARTIN BIRCHALL

When George Osborne announced in 2015 that he planned to introduce an apprenticeship levy on all large businesses, he promised that firms that offered apprenticeships would "get more back than they put in" and said that Britain's "great businesses" would train up the next generation.

Although the emphasis was primarily on volume — the government had made a manifesto commitment to create three million apprenticeships by 2020 — the introduction of the new policy was awash with rhetoric about how the levy would put apprenticeships on an equal footing to a university degree. Robert Halfon, the former minister of state for education, said: "I will be getting the message out there that top apprenticeships are as good as top

university degrees." There is little evidence, so far, that this is working. The government was criticised for the drop in the number of apprenticeships created in the months after the levy was introduced in April last year. The figures for the 2016-17 academic year, however, show that overall apprenticeship recruitment was almost identical to the previous year.

Few of these new starts were higher or degree apprenticeships. Some 36,600 out of 494,000 apprenticeships created in the year to July 2017 were higher or degree apprenticeships and 2,100 of these places were for 18-year-old school-leavers, compared with more than 26,000 places that went to apprentices aged 25 or over.

It's not hard to see why employers may not be rushing to create more apprenticeships at this level. The new system requires every organisation with a wage bill of £3 million or more to pay a 0.5 per cent levy on their payroll. This

can be reclaimed by employers to help to pay for apprenticeships. The levy fund, however, can only be used to cover the formal training costs associated with the apprenticeship.

Although an organisation may be able to reclaim up to £27,000 for the training element of a degree apprenticeship, they will be liable to pay their apprentices' salaries plus recruitment and mentoring costs. It's not unusual for employers to pay upwards of £100,000 in "extra" costs, thereby reclaiming the levy they've paid.

For most finance directors, this sounds very much like paying £4 to save £1 and many have concluded that it may be better to pay the levy in full, or invest in cheaper lower-level apprenticeships.

The other major barrier to employers offering more places is a lack of different types of apprenticeship. Since the ten standards were launched in September 2015 the list of roles has grown to about 30 and not all have begun recruiting.

The government may hit its target of three million new apprenticeships by 2020 but, even with the levy, the new system relies on employers making a significant additional investment to give apprentices a genuine alternative to university. Martin Birchall is managing director of High Fliers Research

Providing a genuine alternative

JULIAN THOMAS

Last May Wellington College hosted The Third Way, a conference that brought together leaders from business and education to ignite the debate on degree apprenticeships. The second conference will be held this May and we hope that it becomes an annual event.

There is no doubt that traditional university courses are the right choice for many, but soaring student debt and doubts over quality have led others to question whether universities offer genuine value for money.

One of the great privileges of my role is having the opportunity to speak to the people who will, one day, employ our students. Many are of one mind —

today's graduates are not work-ready. They lack soft skills. They lack creativity. Now, more than ever, employers are looking for innovators.

What business leaders are telling me is that they would relish the opportunity to work with able school-leavers, grounding them in the things that really matter, instilling in them the values important to their company, while allowing them the space to learn, to fail, to adapt.

Degree apprenticeships offer a genuine alternative and I am delighted that progress has been made since I spoke on this issue last year. Information is more readily available. Students can search for many degree apprenticeships via Ucas, a development that puts them on a more equal footing with traditional degrees.

We are in the midst of a higher education revolution. The blue touchpaper has been lit, but unless more is done to raise awareness and to ensure consistent quality, there is a danger that the degree apprenticeship scheme will fizzle out. And that would be a tragedy.

Julian Thomas is Master of Wellington College. The Wellington College and Good Schools Guide "Third Way" Conference takes place in London on 11 May. For more information email conferences@wellingtoncollege.org.uk

Leading banks look to recruit school-leavers

GREG HURST
SOCIAL AFFAIRS EDITOR

The top retail and investment banks are turning to apprenticeships to train recruits in specialist and leadership roles, alongside their graduate programmes.

Barclays, Lloyds, JP Morgan and Santander offer higher and, increasingly, degree apprenticeships in roles spanning relationship management, finance, technology and leadership.

JP Morgan began its programme five years ago with higher apprenticeships in financial services and technology based in Bournemouth, finance roles in Glasgow and graduate-level technology roles in Edinburgh, under Scotland's separate system. Last year it extended its apprenticeships to its London offices at Canary Wharf. It has 70 apprenticeship roles and says the number of applicants has increased 20-fold since 2013.

For its 18-month level 4 apprenticeships in financial services and digital technology solutions, candidates need three C grades at A level or the equivalent, with no bias towards any subject. Its four-year level 6 apprenticeships require grades equivalent to ABB or higher and applicants must have at least one

qualification in maths, computing or technology. Higher apprentices have a starting salary of £15,000 a year in Bournemouth, or £21,000 a year in London, plus perks such as private healthcare and an occupational pension.

Level 4 apprentices study for an investment operations certificate, equivalent to a foundation degree, with the Chartered Institute for Securities and Investment. Level 6 apprentices are awarded a BSc (Hons) in digital and technology solutions.

Phillip Paige, the head of early careers at JP Morgan, says the academic threshold ensures that recruits will cope with the study involved, run by BPP, a private university. The recruitment process, he says, focuses more on candidates' skills and aptitudes.

From the outset, the bank wanted there to be no barriers or "glass ceilings" that would block the career development of people who joined as apprentices rather than graduates. Five years in, Paige says that this is the case. Indeed, some apprentices have advanced faster than graduates.

When JP Morgan began its apprenticeship programme, executives assumed that it would attract only local applications within, say, a 30-mile radius of Bournemouth. However, a third of

applicants and successful candidates have come from across the UK. The same pattern emerged when it began hiring apprentices in Canary Wharf.

Paige says: "We have been delighted with how positive an impact the apprentices have had. Managers love the attitude these guys and girls come in with. They are very keen to learn, they are grateful for the opportunity and they want to go about setting themselves up for a really strong career here."

Like other larger employers, the bank is considering how it might extend apprenticeship training after the introduction of the apprenticeship levy, which requires it to pay 0.5 per cent of its annual pay bill, but can reclaim the money from an account for accredited training.

"It has acted as an interesting catalyst, both internally at JP Morgan but also from our view looking at apprenticeships more broadly involving various industry groups," Paige says.

"You have lots of people thinking about how they might expand, and that includes us — not just, for example, looking at apprenticeships for school-leavers but also looking at apprenticeships for graduates and to use them for up-skill and reskill opportunities for existing staff."



CASE STUDY

Bethany Camphor, pictured, quit her course at a Russell Group university after finding it insufficiently challenging. Now she is an apprentice with JP Morgan.

Bethany, 20, from the Wirral, Merseyside, spent a year studying English literature at King's College London.

"I felt I wasn't challenged enough, I wasn't busy enough, so I left," she says.

Initially, she applied to other universities and for internships, but then came across the level 4 apprenticeship in financial services. She applied "on a whim".

"The further I went on the application process the more I realised how good an opportunity it is. The process itself was more

rigorous than anything I had to do to get into any of the top universities."

Bethany started in September at JP Morgan's operations and corporate centre in Bournemouth and works in the trading settlement team.

"I have been given more responsibility than I thought I would be," she says. "I enjoy coming into work every day."

She works four days a week; on Fridays she studies. Instead of lectures at King's College London, she watches a live online lecture and spends

the rest of the day studying. She has an exam in several weeks, so she spends an hour before and after work each day in extra study, and two hours at weekends too.

All her friends are still at university, which she says was the expected path at the grammar school she attended. "To come off it is scary and people see that," she says, "but when they hear what I am doing they tend to be surprised and then really, really interested."

And what of her love of literature? "I do my best to read every night," Bethany says. "It is still a huge part of my thinking."



To come off the expected path is scary, but when people hear what I am doing they tend to be surprised and then really, really interested

LEGAL APPRENTICES

100

apprentices are in schemes at law firms and corporate legal departments in England and Wales, according to the Solicitors Regulation Authority

How to break into the big four

ALEXANDRA FREAN
BUSINESS COLUMNIST

On day one recruits to the higher-level apprenticeship programme at KPMG, one of the “big four” consultancy firms, are taught an important company mantra: no question is a silly question. The idea is to encourage curiosity about the world they are entering, and reassure them that they are not expected to know everything when they start.

“Our biggest focus initially is on building up their confidence to ask questions and to help them to recognise the knowledge and skills they have brought with them,” says Kathryn Roberts, the apprenticeship programmes lead at KPMG. “If they have worked in a restaurant they will already have customer service skills.”

Like Britain’s other three leading consultancy companies, KPMG is investing in apprenticeship programmes for bright 18-year-old school-leavers who have decided on a career, are keen to get to work in the “real world” and want to earn a salary, rather than borrow thousands of pounds to go to university. Participants emerge from the programmes as chartered accountants, auditors or technicians with professional or degree-level qualifications on a par with their friends who went to university.

“It’s a no-brainer from a student’s perspective,” says Louise Farrar, the head of student recruitment at PwC. “They are getting a fully funded degree apprenticeship, a salary, a secure job and no debt. And they will be ahead of the graduates when they qualify because they will have 17 months’ work experience.”

Despite these benefits, Maggie Stilwell of EY says there is still resistance among some parents to let their teenagers opt for an apprenticeship rather than university.

“The idea that university is the right route is fairly ingrained with some parents,” she says. “The fact that so much was done by the government to open up university access reinforces this.”

That’s why EY took the unusual step last year of launching the EY Parentship, a parental-advice campaign and workshop to help parents to understand what modern apprenticeships offer. “The first step is to unlearn out-of-date career advice. Look at Bill Gates, Mark Zuckerberg and Steve Jobs — all three are so-called university dropouts who discovered unconventional routes to success,” the Parentship page on the EY website says.

While the benefits for young people who choose the apprenticeship route are increasingly evident, there are huge positives for the firms that offer them too. “At first, I thought, ‘Really, we’re going to take 18-year-old apprentices and put them in front of clients?’” Stilwell says. She changed her mind when she saw the first apprentices in action. “When someone that age is willing to go against the tide and choose to dive headfirst into the world of work rather than go to university, they turn out to be very mature and focused. In a room with our graduates and our school-leavers, I can’t tell the difference,” she says.

EY is so keen on apprenticeships that it has dropped academic requirements for entry. It also enrolls its graduate trainees as candidates for the highest (level 7) apprenticeships, so they get an extra qualification on top of their degree.

While the big four value their graduate trainee schemes, offering between four and eight times as many places to graduates than to school-leavers, all are increasing the numbers and the range of their apprenticeships. KPMG has launched a digital degree apprenticeship, which will award apprentices a bachelor’s degree in digital and technology solutions

from BPP University, a private-sector university college. There are 27 places on the scheme.

PwC is also launching digital degree apprenticeships, with qualifications awarded by the universities of Leeds and Birmingham as well as Queen’s University in Belfast. It is offering 120 places this year. For PwC, launching the digital degree was a strategic decision. “It’s about ensuring that we are growing the technology pipeline so we have security of supply of talent in an area where we know there is a skills shortage,” Farrar says. So could the apprenticeship scheme overtake the company’s graduate trainee programme? Farrar does not rule it out, but thinks the question is premature. Like EY, PwC has found that convincing parents that an apprenticeship might be better than university for students who know they want a career in accountancy and consultancy is not straightforward.

“There’s still some negativity that we have to overcome around the word ‘apprentice,’” Farrar says. This may explain why the big four apprenticeship schemes attract fewer applicants per place than their graduate programmes. Deloitte is fairly typical in attracting 23 applications

per graduate trainee place and 16 for each apprenticeship.

The apprenticeship schemes on offer from the big four are highly structured, generally lasting between two and six years and offering candidates hands-on experience. Candidates are selected via a two-stage process, online and then face-to-face. Once hired, they get intensive pastoral care as well as formal training.

Deloitte, which has been recruiting school-leavers for a decade through its Bright Start programme, matches each participant with a “buddy” in the organisation to provide help. “If they are sitting for a professional qualification, we make sure that the training provided works at a pace that supports them,” says Georgia Greer of Deloitte.

Deloitte has lowered its entry requirements to attract applicants from a wider pool. “We recognised that there were talented students who weren’t going on to university and were looking for something else. Because they have made a choice to join the world of work at a young age, they are very motivated,” Greer says. “We have the same aspirations for them as for our graduates; that one day they will make it to partner.”

WHAT’S THE OFFER

DELOITTE
Field Audit and assurance; business and financial advisory; cyber; governance; risk and regulation; human capital; strategy and operations; tax consulting; technology
Entry requirements Minimum 260 (140 in the new system) Ucas points with GCSE maths, level 6 or above and English language, level 4 or above
Places 370
Starting salary Competitive

KPMG
Field Level 4 and level 7 in accountancy and

taxation; level 6 degree apprenticeship in digital and technology solutions; level 3 in business administration.
Entry requirements 104 Ucas points and five GCSEs grades A*-C or at 4-9 (including English language and maths) or equivalent.

Entry requirements Minimum 260 (140 in the new system) Ucas points with GCSE maths, level 6 or above and English language, level 4 or above
Places 370
Starting salary Competitive

PwC
Field Technology,

accounting, tax and consulting
Entry requirements Varies by role, but the minimum is three C grades at A level, or 144 Ucas points
Places 300
Starting salary Varies by region, according to cost of living

EY
Field Business, digital innovation, business leadership, management practice, graduate programme
Entry requirements None
Places 600
Starting salary Up to £21,500 for business apprentices (school-leavers); up to £31,500 for graduates



CASE STUDY

Elizabeth Oamen, above, was all set to take up a place at Aston University to study chemical engineering when she decided to defer entry and take a gap year.

“One of my teachers said, ‘If you go to university and get a degree, what will set you apart from all the other graduates?’ I realised I needed to do something different,” she says. “So I decided to work in industry for a year.”
It was while working in

IT that she realised university was not for her. “I realised that I enjoyed working rather than sitting in a classroom,” she says. Inspired by friends who worked in tax and assurance, she applied for an apprenticeship with EY. Her parents, however, were intent on her going to university after she got two As and a B in her A levels.

“I didn’t tell my mum until the day I got an offer from EY. She was not too happy about it. I told her I would become a chartered accountant within five years. Once she realised I was going to get paid at

such a young age, she realised it was probably a good deal,” says Oamen.

The financial benefits of becoming an apprentice were a huge pull. “I had graduate friends complaining about £100 or more being taken from their pay cheque every month to repay their student debt. It feels good knowing that I’m not going to build up £49,000 in debt and not have a job at the end of it. I will be guaranteed a job at the end of it. I will be happy about it. I told her I would become a chartered accountant within five years. Once she realised I was going to get paid at

consultancies and chose EY because its “people culture” impressed her. “I have so many friends here,” she says. “I love the culture here. We have time to work and time to go out together and chill.”

Her work, auditing multinational corporations, is sometimes challenging, but help is always at hand from colleagues. Clients are sometimes surprised to see someone so young in the EY audit team, but this rarely lasts long. “They soon come round once they realise I know what I’m talking about,” she says.



CASE STUDY

For 19-year-old Samuel Imrie, below, from Forest Hill in south London, choosing an apprenticeship over university was never about the money.

“My focus was always on starting my career early, getting to work with real people and building up my networks early,” he says.

Having completed a week’s work experience at Deloitte after his AS levels, he was won over. He discovered that Deloitte had an apprentice programme for school-leavers and decided that was what he wanted to do.

Now in his second year as a Deloitte apprentice, he hopes the next step will be to qualify as a certified systems tester.

“Every day I’m working with real clients and getting work experience. I haven’t looked back once,” he says. “There’s a partner at Deloitte who started as an apprentice at another firm. It shows it can be done and that there’s no barrier to rising to the top.”



CHRIS MCANDREW FOR THE TIMES

‘You get thrown in at the deep end’

CASE STUDY

Sophie Scott had her sights set on a career as a costume maker in film or theatre from a young age. She started ballet lessons aged 2 and when she was 13 she spotted an advertisement for a costume apprenticeship scheme at the Royal Opera House.

Sophie took A levels in textiles, psychology, sociology and business at Sevic College in Benfleet, Essex, and applied to university “as a back-up”. But when she was offered a two-year costume apprenticeship at the Royal Opera House, beating 150 applicants in the process, she accepted straightaway.

Sophie’s apprenticeship is a level 2 qualification — there isn’t a level 3 or 4 option — but she found that the faster she progressed, the more complex tasks she was given. On the first day of her apprenticeship she

was making shoulder pads for performers in *Der Rosenkavalier*. In the past 18 months she has created waistcoats for the chorus of *Otello* and is now part of a team making layered net tutus for the Royal Ballet’s production of *Swan Lake* in May.

She spends one day a week training at Newham College and four days working in Thurrock, where the Royal Opera House’s costume centre is based, with fittings at Covent Garden, London, in between. She also gets tickets to the final dress rehearsals at the Royal Opera House, giving her the chance to see her work on stage.

“I’ve advanced a lot faster than people who went to university,” says Sophie, who earns £15,000 a year. “An apprenticeship is a good way to get into a job like this. You get thrown in at the deep end, but you’re learning from the very best people.”

EMMA LEE-POTTER

Is there a role for elite apprenticeships in a sector where talented youngsters are so eager to get a job that they will work for free to get started?

The arts is an area that is relatively new to higher apprenticeships. Up until a decade ago, employers in film, TV, publishing and theatre were more likely to recruit graduates, often on internships and short-term work placements, than train apprentices straight out of school.

Now the situation is changing. The BBC, Channel 4, Sky, the Royal Shakespeare Company and other arts and media organisations are seeing the advantages of training school-leavers on the job, helping them to gain relevant qualifications and enabling them to get on the career ladder earlier than those who go to university.

At the moment level 2 and level 3 apprenticeships (equivalent to GCSEs and A levels respectively) outnumber the number of higher-level programmes (level 4 and above) in the arts. The National Theatre, for instance, has 12 level 2 and level 3 apprentices — in roles ranging from wigs, hair and make-up to technical theatre — but none at level 4. The Royal Opera House also has 12 apprentices, all at levels 2 and 3, working in areas such as lighting, scenic metalwork and costume making.

However, Bendy Ashfield, the apprenticeships manager at the Royal Opera House, says the level does not appear to matter to those who complete them. “Our apprentices are so employable at the end of their apprenticeships that they want to get going in a job rather than do more studying,” she says.

Like graduate jobs in the arts, apprenticeships are highly competitive. So why aren’t there more of them, particularly at level 4 and above?

One reason is that the process of developing a new apprenticeship standard is a lengthy one — it takes

Great employment prospects for theatre and media trainees

12 to 18 months to develop an apprenticeship. The new standards are designed by employers to meet the skill needs of their sector. At least ten employers, known as trailblazers, must commit to developing an apprenticeship standard, with the intention of using it themselves once it is ready.

“There are very few higher-level apprenticeships in the creative and cultural industries that are active yet because of the apprenticeship reforms,” says Sara Whybrew, the programme director for Creative & Cultural Skills, a charity that has helped to create more than 8,000 apprenticeships since 2008.

“There is progress in terms of the sector coming on board and thinking about apprenticeships as a valid route into specific occupations, but apprenticeships have to be created to respond to industry need and employer demand.

“It’s got to be about people progressing into real jobs and learning how to become competent for that organisation and the sector as a whole. “We don’t have a culture in our sector, unlike sectors such as construction, of recruiting people into specialist occupations via apprenticeships. They are very new to the industry.”



Beautifully crafted costumes in *Manon* at the Royal Opera House

Other reasons for the lower numbers of apprenticeships in the arts include the sector’s history of hiring unpaid interns, a trend that affected the diversity of the workforce and disadvantaged applicants who could not afford to work without pay. It also has a long standing freelance culture and plethora of short-term contracts.

Apprenticeships must last for a minimum of 12 months, with 20 per cent structured off-the-job training, which isn’t always compatible with

Theatrical openings

12

The number of level 2 and level 3 apprenticeships available at both the National Theatre and the Royal Opera House

film and TV productions that run for six or nine months. However, this hurdle can be overcome by using an apprenticeship training agency that employs apprentices and outsources them to companies for short-term projects, thereby ensuring they have continuous work.

Present apprenticeships at level 4 include two roles in visual effects — assistant technical director and junior 2D artist — both of which are being used by Framestore, a London-based visual effects company with eight apprentices.

Apprenticeships in development at level 4 and above range from production manager and broadcast and media systems technician to animator and storyboard artist.

“By opening up entry routes apprenticeships can deliver significant employment and cultural change in the screen-based creative industries,” says Seetha Kumar, the chief executive of Creative Skillset, an organisation that works with the UK’s screen-based industries to develop skills and talent. “But as our sector has a high proportion of SMEs and extensive project-based and freelance working, we need flexibilities if we want to increase take-up and benefits.”

Nicole Suter, a standards associate at Creative Skillset, points out that many opportunities are administrative rather than creative and urges young people to consider a broad range of roles. “We’ve been busy over the past 12 months getting more apprenticeships in place and the number of opportunities is growing,” she says. “But young people and their parents should be aware that there are more jobs behind the camera than in front of the camera.”

Whybrew agrees. “Without good administrators you can have all the creative people in the world, but not a lot will happen,” she says. “The jobs that are specifically artistic or creative are very much outweighed by technical, operational roles.”

Degree apprenticeships could plug tech skills gap

MARK BRIDGE

TECHNOLOGY CORRESPONDENT

Fifi Ghaith is 21 years old and has a first-class degree and an analyst's job at the IT outsourcing firm CGI on £29,000 a year, with good promotion prospects.

She isn't an ordinary graduate who got lucky, but one of the first to have completed a degree apprenticeship, a new career route that experts hope will address a chronic shortage of tech talent and lack of women in the industry.

On the three-year course, Ghaith, who is from Epsom in Surrey, spent Mondays at Winchester University and the rest of the week at her sponsor's offices, working on real-life projects involving cybersecurity, data protection and robotics, among other areas.

She discovered the scheme in sixth form when a former pupil who had completed it came to speak to her year. "She was totally inspirational," Ghaith says. "So confident and professional. I'm surprised these schemes aren't better known because they have so many advantages. You have no debt, a salary and you're working on real-life projects. Apart from the technical knowledge, it has made me more mature."

She adds: "You still get the university experience and see friends your own age, but you're always busy, not sitting at home or doing shifts at a bar. The apprentices in my year got better grades than the other students, even though we did the work they did in five days in one. Our grades counted directly towards our CGI appraisals and pay deal."

While her school friends were building up debts, Ghaith earned £14,000 in her first year, £18,000 in her second year and £23,000 in her third year. She recently bought a new car.

British businesses need about 138,000 new entrants a year to fill digital specialist roles and more than half of our tech companies have vacancies they are struggling to fill. Women are seriously underrepresented.

Despite this, graduates in computer science have among the highest unemployment rates, with 9 per cent out of work six months after graduation. There is clearly something wrong with how this subject is being taught at universities or who they are recruiting on to their courses.

Digital degree apprenticeships that combine classroom learning with industry employment are offered by employers including the big technology firms such as IBM and CGI, and other companies that need tech talent, such as John Lewis. The number of placement starts increased by 140 per cent to 490 last year, with other companies starting their degree schemes this year. PwC, the accountancy firm will offer digital degree apprenticeships to 100 young people a year from September.

The schemes mostly require three A levels at grades A to C, including at least two science, technology or maths-related subjects — the same qualifications to get on to a computer science degree course at a good university.

The Tech Partnership, which brings together the companies offering apprenticeships, says there's still a misconception that degree apprenticeships could lead to lower



degree achievements, attracting less "academic" students. In fact, like Ghaith, the first degree apprenticeship graduates have on average scored higher in their university work than their non-apprenticeship peers.

Karen Price, the chief executive of the Tech Partnership, says: "Many of the businesses we represent are seeking a more immediate impact. The more pragmatic, blended learning approach of a degree apprenticeship therefore makes

perfect sense. This is very much a case of a situation in which everyone can benefit: employers get access to fresh new talent for their organisations, universities benefit from building closer ties with industry and enhancing their employability performance, and the apprentices gain a unique blend of academic and practical skills that will set them up for a successful career in tech."

Professor Alan Woodward of the University of Surrey says: "University is not necessarily the right place for everyone to learn. Some do better in a more applied environment. That's where apprenticeships can play a very important role. Of course, apprenticeships have the great advantage that you come out with a qualification without having a student debt, which we know deters some."

"Bearing in mind just how short we are of technical skills, anything that can attract people into the field has to be welcomed. The problem of attracting young women in technical fields is particularly acute. Again much of this is cultural, with their key influencers [parents and teachers] steering young women towards non-technology-based careers, despite the much greater opportunity for finding a job and earning more."

TIMES PHOTOGRAPHER RICHARD POHLE



Left: During her course Fifi Ghaith worked on various projects at her sponsor's office, including robotics



The technology giant Google has a large

base in King's Cross, London. The company is working with WhiteHat to produce its first two-year, level 4 apprenticeships in software engineering

Providing the digital skills that companies seek

EUAN BLAIR, SOPHIE ADELMAN

Time and again we hear that today's school-leavers are digital natives. Yet the widening skills gap in the UK workforce reveals that this does not necessarily translate into digital proficiency at work.

Apprenticeships offer the opportunity to close this technical skills gap, training young people in the tools and techniques that employers really need.

Take marketing: no longer powered by creativity alone, the pressure to track, analyse and prove return on investment has transformed the field into a much more technical discipline. According to LinkedIn's recent UK Workforce Report, hiring rates in the media and communications sector are up nearly 7 per cent from last year. Despite the increased demand, more than three-quarters of UK employers report a shortage of digital skills in the workplace — particularly in marketing, where just 8 per cent of employees are said to possess entry-level digital skills.

And it's not just in marketing that employers are struggling. According to Sherry Coutu, the founder of Workfinder, a work experience marketplace app, 92 per cent of vacancies at start-ups and scale-ups now require STEM subjects (science, technology, engineering and maths) for digital and technology roles.

As a tech start-up, we at WhiteHat

understand how important it is to equip our apprentices with the skills they need. We have built a clear pathway, with apprenticeships in everything from IT support and software engineering through to data analytics and digital marketing.

By partnering with General Assembly, the pioneering Silicon Valley learning provider, we have created a level 3 digital marketing qualification. Integrating its content and a bootcamp experience into our apprenticeship programme has created a learning experience that is helping our apprentices to get ahead at some of the UK's most exceptional companies.

Software engineering is another problem area for hiring. Many software engineers come to their profession indirectly. They might have studied science or maths at university, coding in their spare time as a hobby. Going to university for three or four years to study computer science doesn't set them up for success in the world of work — and they're rebuilding up £50,000 of debt.

We are working with Google on its first apprenticeships in software engineering, in partnership with Ada, the National College for Digital Skills. This is a two-year, level 4 apprenticeship under the software engineer level 4 standard, targeted at school-leavers who have demonstrated an interest in coding. For a young person set on becoming a

CASE STUDY

When asked what helps them to reach their goals, more than 25 per cent of our apprentices say tangible achievements — being able to complete projects of which they could feel proud. It was the most important factor in keeping them engaged and successful.

One of our WhiteHat apprentices, Amy Davies, 21, is completing her level 3 digital marketing qualification at Portland Communications. Having completed her A levels in graphic design, print media, photography and ICT, she decided that an apprenticeship would be the best way to explore and develop her passion for creative and digital media.

Davies was recently asked to design a video for one of Portland's clients, to be shown in a large international airport. She managed the project from beginning to end and her work was shown for hundreds of thousands of people daily.

Given how well she coped with the project, her line managers have trusted her to take on filming projects around the country and have decided to send her on an animation course to develop her skill set. They intend to continue setting her large-scale projects and exploring other ways to support her development.

"I've been given a lot of responsibility which I never thought I would get so soon as an apprentice," she says. "And I'm looking forward to the future opportunities."

developer, it's a great way to build strong foundations, accruing two years of experience at a respected company and gaining a nationally recognised qualification in the process.

We are also working with employers who are keen to build a junior developer talent pipeline to design a combined level 3 and level 4 software engineering qualification. Delivered over three and a half years, the apprenticeship will teach the foundations of Java and a deep knowledge of web technologies. We have recently worked with the business software developer Sage to place an apprentice in their deep-tech robot-building team developing the next generation of artificial intelligence.

Almost every job today requires digital fluency, so we embed digital skills across all of our qualifications — from accounting to business administration to HR support — through our Future Leaders Foundation qualification that all our apprentices complete. These digital skills are delivered in bite-sized modules via our online learning platform.

Perceptions about apprenticeships are changing. Employers are identifying apprenticeship programmes as a way to address the skills gap. For talented, ambitious young people eager to launch their careers, an apprenticeship could be an exceptional first move. Euan Blair is the founder of WhiteHat, an apprenticeships company

Professional recognition as a manager is a bonus

PETRA WILTON

For young people embarking on a career in business, the number of university courses on offer, along with the prospect of massive graduate debt, can be confusing and intimidating. However, more top UK employers are running chartered management degree apprenticeships and there is an alternative route to a successful career in business.

Most young people, and their parents, know little about the chartered management degree apprenticeship. Introduced in 2015, it combines full-time employment with studying for a degree and professional chartered status in the areas essential to managing effective teams and for the running of a business.

Many leading UK employers, including Barclays, Nestlé, Boots, the Civil Service and McDonald's, offer degree apprenticeships and have designed their programmes in partnership with business schools, like those at Aston University, Manchester Metropolitan and Nottingham Trent. The tuition fees are paid by the employers via the apprenticeship levy and the apprentices earn as they learn.

The Chartered Management Institute is the only professional body that can award chartered manager status in the UK, and it has taken a lead role in working with employers to develop these programmes. It can assess apprentices at the end of their programme and award the professional recognition of chartered manager status, alongside their degree and apprenticeship. This professional accreditation marks excellence in management and leadership as recognised by employers and provides the membership, career development and progression opportunities of a national professional body.

These new chartered manager degree apprenticeships are emerging as one of the most desirable apprenticeships for employers. Universities UK reports that these are the fastest-growing degree-level apprenticeship, alongside digital and engineering. These areas reflect the biggest skills gaps faced by employers. And apprentices can expect to earn £50,000 more during their career compared to graduates from non-Russell Group universities.

More than 1,200 individuals are enrolled on a chartered manager degree apprenticeship, learning business and management skills such as operational strategy, engaging a team, project management and business finance, while working for an employer. They commit to spending at least 20 per cent of their time on training and development. This includes university lectures, online seminars and practical work-based projects and assignments.

As they are working they can apply their new skills immediately. On Nestlé's programme in the first two years apprentices undertake work placements in one area in their final year, while studying for a BA (Hons) degree in professional business practice at Sheffield Hallam University.

Nestlé covers the fees and accommodation, meals and travel costs for studying in Sheffield. For details visit managers.org.uk/management-apprenticeships. Petra Wilton is director of strategy at the Chartered Management Institute

Campaign to build the engineers of tomorrow

NICOLA WOOLCOCK
EDUCATION CORRESPONDENT

Engineering is in the spotlight this year as part of a 12-month campaign to tackle the skills gap. Led by the government, the campaign announced that this is the year of engineering, so the profession is under scrutiny.

Traditionally the industry has been at the forefront in offering higher level apprenticeships. These are in a range of engineering sectors, from rail to space. Five national colleges have been created specialising in high-speed rail, nuclear, onshore oil and gas, digital skills and the creative industries.

Engineering apprenticeships are being created across many institutions and companies to help to bring to fruition the estimated £500 billion of British infrastructure projects that are in the pipeline. These include the Thames Tideway Tunnel, the upgrading of main roads and the construction of homes.

Businesses large and small are involved, from Jaguar Land Rover establishing engineering degree apprenticeships, to smaller companies paying for recruits to take software engineering degree apprenticeships that lead to a bachelor's degree in digital and technology solutions

from the University of Exeter. Successful applicants pay no tuition fees and will graduate debt-free.

The year-long campaign intends to widen the pool of young people who join the profession. In 2016 Engineering UK estimated that 182,000 people with engineering skills would be needed each year until 2022, but that there was a shortfall of roughly 69,000 people entering engineering or technology-related employment. The rail industry faces further skills shortages, with one in five rail engineers aged over 55.

Ann Watson, the chief executive of the Science, Engineering and Manufacturing Technologies Alliance (Semta), a not-for-profit organisation, said that there has been strong growth in higher and degree apprenticeships in engineering over the past few years.

"Engineering employers were among the first to get involved in designing and delivering degree apprenticeship programmes," she says. "It's easy to understand their popularity in a sector where a common complaint of employers has been that their graduate-level recruits, although technically excellent, can lack employability skills."

"By bringing in a degree apprentice, an employer can not only ensure that their highly skilled engineers have the right

level of knowledge, but that they have had regular opportunities to test that knowledge in the workplace.

"It's even easier to understand the growing popularity of engineering degree apprenticeships and higher apprenticeships from the point of view of those taking them. Why take a traditional degree course and land yourself in £50,000 of debt when you could get the same degree, earn a wage and gain that all-important work experience through a degree apprenticeship?"

She predicts high-level engineering apprenticeships will grow in number, especially if the government reforms the apprenticeship levy.

Introduced last year, the levy obliges businesses with an annual wage bill of £3million or more to pay 0.5 per cent of their payroll costs into an apprenticeship fund. Employers can draw on the fund to help to cover the cost of their training, as long as they do so within two years of making a contribution. The levy is imposed on firms across the UK, but the availability of that money to fund apprenticeships differs in Wales, Scotland and Northern Ireland.

"The one thing government could do that would really put rocket boosters under the programmes would be to change how the apprenticeship levy

works so that employers can transfer more of their underspend to suppliers and other engineering employers — 10 per cent is a start, but it is not enough. "We need highly skilled people throughout supply chains in our sector and the transfer of levy funds would be an easy way to ensure that their training costs can be covered."

Ministers announced the year of engineering in November in an attempt to increase awareness and understanding among children aged seven to sixteen about what engineers do. Companies involved include Hitachi, Bombardier, Shell and Highways England. The UK Space Agency is supporting the campaign by funding a series of education and outreach projects designed to inspire interest in science, technology, engineering and mathematics.

The projects build on the success of the education programme supported by the space agency that was linked to Tim Peake's Principia mission to the International Space Station. More than 1.6 million young people in nearly 10,000 schools across the UK took part in one or more of the projects, which covered topics ranging from food science to plant biology and from exercise to programming computers in space.

The agency is also funding interactive activities in science and discovery centres across the UK, designed to introduce young children and their families to the work of engineers and scientists engaged in some of Britain's space missions, including the James Webb Space Telescope (the successor to Hubble) and the ExoMars mission that will carry a UK-built rover to Mars in 2019.

It is hoped that by the time today's primary school children are school leavers, degree apprenticeships will have become much more mainstream.

SKILLS SHORTAGE

182,000

The number of people with engineering skills needed each year until 2022, as estimated by Engineering UK



COVER AND BELOW: STEVE MORGAN FOR THE TIMES

From footballer to rail engineer

CASE STUDY

Liam Wakefield, left, played football for Doncaster Rovers from the age of 12 to 21, writes Nicola

Woolcock. Now 23, he still plays elsewhere part-time, but knew he had to retrain in a new field to guarantee a lifelong career, off the pitch.

He has decided to secure his long-term prospects by signing up to a higher-level apprenticeship at the new National College for High Speed Rail in Doncaster.

Wakefield says: "I've seen the new college under construction every day over the past year while on my way to training. The building took my interest and when I came here and saw it, I knew I had to be part of it."

"The training I'm doing here is giving me a route towards a long-term career in engineering and hopefully I'll be able to contribute my skills to a huge national infrastructure project such as High Speed 2. The good news is that I can also fit in the football part-time."

The Doncaster Locomotive and Carriage Building Works opened in the town in 1853 and lasted for more than 150 years, giving the world the *Flying Scotsman* and *Mallard*, the original high-speed trains.

He adds: "Being a Doncaster lad, I'm really proud to have this facility on my doorstep. I've seen how the town has developed over the past few years and I know all about its railway history so having the National College for High Speed Rail here is only going to make things better and improve the place even more."

"I've loved my career in football but now I want to focus my efforts on having a long-term, well-paid career helping to build the next generation of rail infrastructure that Britain needs."

After leaving school at 16, with GCSEs at A and B grade in maths, science and English, Wakefield joined Doncaster Rovers' youth team and was awarded an apprenticeship in sport and active leisure, from 16 to 18. Then he became a professional footballer.

He is studying for a certificate of higher education in high-speed rail and infrastructure and will switch to a higher apprenticeship next month, while playing part-time for Boston United. Eventually he would like to secure a managerial position in technical engineering.

He says: "The work I'm training for now is definitely more important than football. It's a lifelong career that I'm working towards; it's all about my future and that takes priority now — until I retire basically."

"It's massively important for Britain to train more engineers. There are a lot of young people who need to be given a chance. You've got to start with the younger generation to create a positive future for the country and if people show the right attitude, they should be the right kind of person for the task."

"For those who are a similar age and thinking about whether this could be right for them, I would say that it doesn't matter about your level of education and it's really all about your attitude. If you want to succeed, you absolutely will."

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INSPIRED WORK

A salary and a master's degree for graduate apprentices

NICOLA WOOLCOCK
EDUCATION CORRESPONDENT

A leading employer and university have joined forces to launch a postgraduate engineering apprenticeship programme that gives recruits a master's qualification. BAE Systems and Cranfield University believe that the programme is the first of its kind.

A cohort of 76 graduate engineers started the academic part of their apprenticeships this month, with all teaching delivered online. These include interactive video sessions with academics at Cranfield University, a postgraduate university that specialises in science, engineering technology and management. The remote online learning allows the graduate engineers

the flexibility to study around their day-to-day role within the business, without taking time out from work or having to travel to the two campuses in Bedfordshire or Oxfordshire. They will undertake modules including design-driven innovation, operations management and cost engineering. On successful completion, the apprentices will obtain a postgraduate diploma in engineering competence — a key step towards reaching chartered engineering (CEng) accreditation.

The level 7 apprenticeships are in maritime engineering, air, electronic systems and land, with recruits spread across the country from Portsmouth to Telford. BAE Systems said that it was seeking to attract talent from the widest cross-section of society: it recruited just under 600 apprentices across its wider apprenticeship schemes last year and reported record numbers of female apprentices and apprentices with disabilities. Of its 650 apprenticeship places open to applicants this year, 120 are at postgraduate level.

Richard Hamer, the director of education and skills at BAE Systems, says: "We're excited to be the trailblazer for this new qualification and we're delighted that our graduate engineers are able to partner with such a prestigious institution as Cranfield.

"As part of our ongoing commitment to nurture talent and high-end skills, the postgraduate diploma in engineering competence will allow our graduate engineers to apply their learning in a work-based context, with the assessment focused on competency rather than academic ability."

Rajkumar Roy, the director of manufacturing at Cranfield University, said: "This innovative programme further strengthens Cranfield's master's level apprenticeship offering. Through online delivery, engineers will be able to study through live interactive and

HMS Audacious is launched by BAE Systems at its site in Barrow-in-Furness in Cumbria



on-demand sessions. Working in partnership with BAE Systems allows us to tailor our educational programme to meet the needs of engineers and industry."

Rebecca Jaggon, 22, and Christian Balan, 24, are among the first students to start the level 7 BAE Systems apprenticeship. Jaggon is a graduate systems engineer working in Rochester, where the company's electronic systems operation is based.

She says: "I was interested in completing another qualification, but didn't want to take time out of work to study. The new programme offers the best of both."

Balan, an aircraft maintenance and support graduate based at the Warton plant in Lancashire where the Eurofighter Typhoon is built, also says that it was important to keep working and get the necessary experience on the job.

"I was looking for something that would further develop and hone my skills while pursuing a structured development framework towards the CEEng accreditation," he says.

"Ultimately this opportunity allows me to carry out my current role within the military air business, while merging the invaluable experiences gathered on the job with the academic excellence of the university."

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