Science Industry Partnership

Supported by Cogent skills for science industries

Apprenticeship Survey 2020

Insights into the adoption of apprenticeships in the science industries

CONTENTS

ACKNOWLEDGEMENTS

The Science Industry Partnership wishes to thank all of the employers who responded to the online survey.

SIP worked closely with a number of other organisations to ensure as wide as possible dissemination of the survey across the science industries. In particular, we would like to thank the Advanced Therapies Apprenticeship Community (ATAC), Association of British HealthTech Industries (ABHI), Association of the British Pharmaceutical Industry (ABPI), BioIndustry Association (BIA), Chemical Industries Association (CIA), Chemicals Northwest, and Medicines Manufacturing Industry Partnership (MMIP).

FOREWORD

The Science Industry Partnership (SIP) launched its first Apprenticeship Survey in 2018 and, whilst we have a considerable amount to celebrate since then, much has changed. COVID-19 has altered the landscape of our business world, having a major impact on our economy, our way of conducting business and our way of life.

Indeed, the rapid development of a vaccine is a great success borne out of collaboration between highly talented people from across the global scientific community. As we emerge from the pandemic, the need to invest in future skills to spearhead a recovery will never be greater.

As an employer led membership group, that spirit of collaboration also sits at the very heart of the SIP, and my grateful thanks go to colleagues who underpin and champion its work and success. The results of this report represent the views of employers from across the breadth of the science industries, providing valuable insight into apprenticeships and their funding.

I am encouraged to report that 82 % of respondents are currently training apprentices, and that the science industry has a higher proportion of young apprentices (63 % aged 16 – 24) when compared across the wider apprenticeship workforce in England.

In 2018, we revealed that only 13 % of the Levy raised by respondents had been recovered for training apprentices. That recovery rate in 2020 now stands at 28 %, a welcome improvement; however, more action is required as Levy contributions, amounting to millions of pounds, continue to drop out of the science sector every year. In this regard, the SIP continues to press for increased flexibility to the Levy system, in addition to setting a new target for Levy recovery in line with the current benchmark across all industries.

Overall, there is much cause for optimism. Apprenticeships continue to be used flexibly to both upskill the workforce and attract new talent. There is also a noticeable shift toward degree (or equivalent level) apprenticeships, 18 % in 2020 compared to 6 % in 2018.

Delivering an ambitious vision for apprenticeships within the science industries will require close collaboration between employers and government, and I am pleased to announce that the SIP will be establishing a new dedicated forum to take responsibility for shaping the apprenticeship agenda.

Finally, the release of these findings and recommendations represent another important milestone on our journey. I look forward to working together as we take the next steps in the development of an apprenticeship system that will contribute so much to our future prosperity.

Dr Malcolm Skingle, Chair of the Science Industry Partnership
Director, Academic Liaison, GlaxoSmithKline

EXECUTIVE SUMMARY

Never before has there been such a need to ensure there is a world class skills base for the UK science industry. In addition to the ongoing need to keep pace with technological change and innovation across the industry, access to a skilled workforce continues to be fundamental to ensuring the UK remains globally competitive. Industry and government must invest in the UK's domestic STEM workforce skills base to secure a strong post-COVID recovery that drives innovation, grows the UK economy, and ensures we nurture a highly skilled and inclusive scientific workforce.

The Science Industry Partnership (SIP) is a membership organisation of employers from across the UK science industries, collaborating to ensure that the skills needs of the sector are realised to enable it to compete in a global market. In 2018 the SIP published its first Apprenticeship Survey report[1] following significant reforms to the apprenticeship system in England. This enabled the SIP to make key recommendations around what changes should happen to increase apprenticeship numbers in a sector that needs to recruit up to 250,000 scientific and technical staff by 2025[2].

In 2020, SIP undertook a comparison exercise repeating its 2018 activity. This report forms a comprehensive, evidence based message from a broad range of sub-sectors across both Industrial Sciences and Life Sciences, around how the apprenticeship system is working and what changes the sector would like to see to maximise its effectiveness. Science industry employers are now utilising apprenticeships throughout their businesses to address a variety of skills gaps in different areas and at different levels. This is highlighted by the fact that recovery of Levy has more than doubled from 13 % to 28 %, with both sub-sectors making great progress. The Life Sciences sector now recoups 24 % of its Levy payments, up from 6 % in 2018, while Levy recovery from responding Industrial Sciences employers now stands at 38 %, up from 23 %.

Employers are now increasingly using apprenticeships to upskill the existing workforce. It has also been encouraging to see an increase in the uptake of Higher Level Apprenticeships to address the growing demand for much sought after skills across the sector. The SIP remains committed to achieving greater ability for employers to collaborate and transfer unspent Levy to SMEs, as well as greater flexibilities to the system including a review of the time allowed to spend Levy funding. The issue of the quality and availability of suitable local training provision for science apprenticeship standards remains a concern.

The need for collaborative working on the apprenticeship route remains a priority and the new SIP Apprenticeship Strategy Group will bring the sector together and unite both industry and government around a shared agenda to deliver the right standards, provision and support for the next generation.

Finally, adjustments to the data collection of apprenticeship starts are recommended, to enable a more accurate measure of apprenticeship uptake in the sector when the Survey is repeated in 2022. The SIP commits to taking these recommendations forward in a partnership with government.

1. Science Industry Partnership: Apprenticeship Survey 2018
2. Science Industry Partnership: Skills Strategy 2025

STATUS UPDATE

In 2018, the SIP made a number of key recommendations, in relation to both the Levy and the wider apprenticeship system, which the sector felt would serve to improve the quality and accessibility of apprenticeships. There is now an opportunity to assess how these initial recommendations have developed over time and, if necessary, to re-evaluate and ensure they remain representative of the current needs of science-based companies. The progress is shown in Table 1.

Table 1: Status update on the recommendations that were made in the SIP's Apprenticeship Survey 2018

	2018 Recommendation	2020 Status update
1	Introduce the ability for employers to collaborate and pool Levy to increase apprenticeship numbers	• In April 2019, the amount that Levy paying companies can transfer was raised by government from 10 % to 25 %, however; challenges remain with the current process for transferring considered a high administrative burden. • From August 2021, government will be introducing a new 'pledge' function that will simplify the process of transferring Levy, allowing businesses to pledge specific amounts of their funds as being available for transfer. Also being launched is a new online service to help match Levy payers with SMEs that share their business priorities[3]. Widespread adoption of these functions would demonstrate to government that the sector is prepared to utilise the flexibilities that are afforded to it, as we continue to seek further flexibilities to the Levy system. .
2	Continue development of employer-led apprenticeship standards and ensure provider capability to deliver them	• Since 2018, the SIP has supported and facilitated the development of 7 new Science Industry Apprenticeship standards including: L6 Laboratory Scientist, L7 Research Scientist and L7 Bioinformatics Scientist. These have contributed to the shift towards Higher Level and Degree Level apprenticeships. • It remains critically important to maintain the continuous development of employer-led apprenticeship standards to keep up with changes in technology and industry needs.
3	Introduce flexibilities to apprenticeships and use of the Levy to increase company engagement	• From April 2021, government will be allowing employers in construction and health & social care to 'front-load' training for certain apprenticeship standards, while exploring whether this offer can also be made available in other sectors. • Increasing the amount of time available to spend Levy funds up to 48 months would give companies more flexibility as they continue to adapt their training plans.
4	Increase the profile and promotion of the apprenticeship route into the science industry sector	• The SIP will continue to champion STEM outreach schemes, such as the SIP Ambassador programme[4], as an opportunity to inform and engage future apprentices.
5	Record data on apprenticeships at a sectoral level and ensure use of sector Levy in support of Industrial Strategy and Sector Deals	• There is a continuing need for government to record apprenticeship data at a sectoral level. This could be achieved by including the Standard Industrial Classification (SIC) code of the host employer on an apprentice's Individualised Learner Record (ILR). • The SIP will continue to conduct this survey every two years as a means of obtaining valuable information that isn't available elsewhere.

3. Department for Education - Skills for Jobs: Lifelong Learning for Opportunity and Growth, 2021
4. https://www.scienceindustrypartnership.com/sip-ambassador-programme

KEY FACTS

82% surveyed are currently **Training Apprentices**

64% male vs 36% Female

63% aged under 25

18% Apprenticeships **Level 6 or 7**

86% plan to train **apprentices** in the next 12 months

45% of apprentices are **existing employees**

55% of apprentices are **new recruits**

91% respondents currently pay the **Apprenticeship Levy** ££££

Employers are paying **annual Levy contributions** £23.3m

unrecovered Levy £16.8m

Levy recovery rate 28%

Levy recovery rate **Life Sciences** 24%

Levy recovery rate **Industrial Sciences** 38%

BACKGROUND AND METHODOLOGY

Responses were obtained using an online survey from employers across the science industry sector. The data were collected between April and October 2020. This is a follow up to a similar survey conducted in 2018, intended to map the continuing evolution of the apprenticeship system in England. This is an important source of information on the issues that affect the direction of apprenticeships in the science-based industries. These data are not available anywhere else, so it is vital that employers have again rallied to support the survey and provided the SIP with valuable insight.

In total, responses were obtained from 46 separate companies, **82%** of which were **currently training apprentices.** For the purpose of this report, and reflecting the structure of the SIP, the industry sub-sectors have been grouped into either 'Life Sciences' or 'Industrial Sciences' sector categories. Table 2 shows how each of the industry sub-sectors have been allocated.

Of the 46 responding employers, 24 were categorised as Industrial Sciences and 22 as Life Sciences.

Employers were asked to allocate themselves to a size category based on the total number of employees across all sites in the UK. Figure 1 shows the breakdown of responses from each size category.

Respondents were grouped based on their total number of employees. Employers with fewer than 250 employees were defined as small or medium-sized enterprises ('SMEs') and employers with more than 250 employees were defined as 'large organisations'.

Table 2: Allocation of industry sub-sectors into grouped sector categories

Life Sciences	Industrial Sciences
Industrial Biotechnology	Anaerobic Digestion & Biogas
Medical Biotechnology	Chemicals
Medical Technology	Coatings/Paints/Resins
Pharmaceuticals	Downstream Petroleum
	Polymers/Plastics

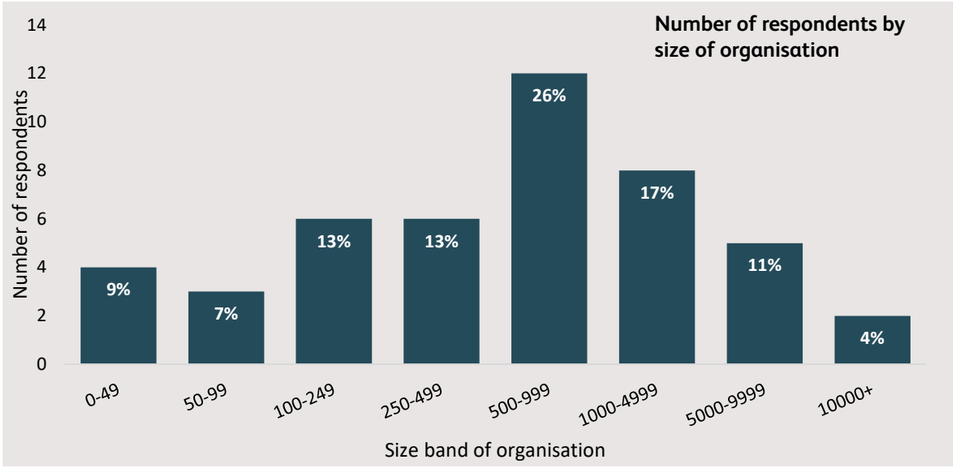


Figure 1: Breakdown of the proportion of responses from each size category

In total, there were 13 employers classified as SMEs and 33 as large organisations. Within Life Sciences, there were 2 responding employers classified as SMEs with 20 classed as large organisations; of the Industrial Sciences respondents, 11 were classified as SMEs and 13 as large organisations.

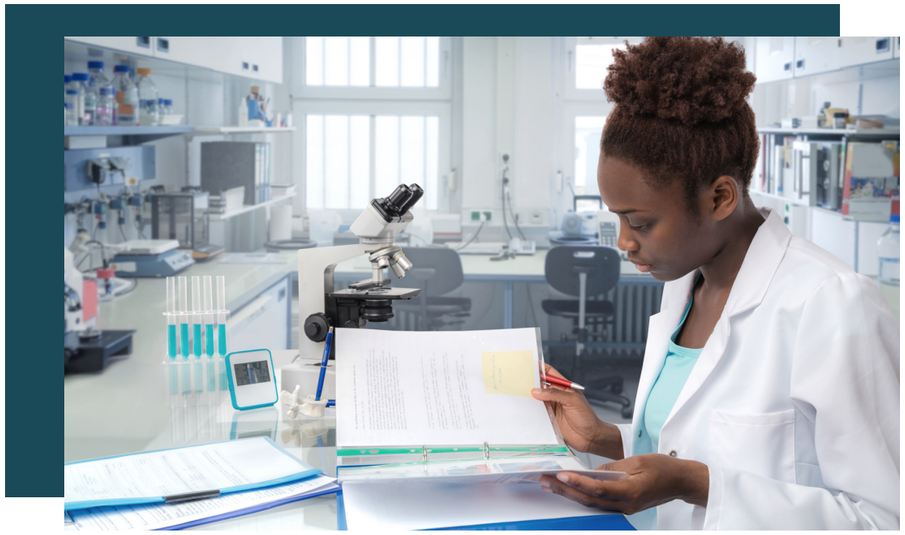
By examining the size of the employers who responded to the survey, it is estimated that approximately 100,000 science industry employees are captured within this analysis, equating to around 15 % of the total UK science industry workforce[5]. Although 46 separate companies represents a small proportion of organisations within the SIP sector footprint, the survey has captured many of the sector's largest employers. Consequently, the workforce accounted for is much larger than the number of respondents would at first suggest.

The survey was conducted at the height of the coronavirus pandemic, from April – October 2020. It is likely that the significant disruption caused to businesses in this period has contributed to the lower response rate. The survey closed before the positive news broke regarding the discovery and production of safe and effective vaccines. Therefore the organisations who have responded, have done so during a period of unprecedented uncertainty. This does not affect the validity of the data but it is worth noting.

The survey was designed with the intention of providing an update to the insights gained during the 2018 edition. The aim was to collect both quantitative and qualitative data from the science industry on current apprenticeship use, the progression of the Apprenticeship Levy system and future planning.

The SIP will continue to repeat a version of this survey on at least a bi-annual basis in order to obtain up-to-date, comparable datasets for measuring apprenticeship uptake in the science industry and to observe changes in Apprenticeship Levy usage. The SIP is keen to engage with as much of the sector as possible with this reporting.

A copy of the survey questions can be obtained from the SIP website: (www.scienceindustrypartnership.com)



5. Labour Force Survey 4 Quarter Average 2019, Office for National Statistics

FINDINGS AND DISCUSSION

Current apprentices

The first section of the survey set out to understand the current position of apprenticeships within the science industry sector, by ascertaining several key factors, including:

- the proportion of responding employers who currently train apprentices
- the number of apprentices that are currently being trained
- whether employers have an annual intake or if apprentices are trained as required
- the proportion of newly recruited apprentices versus upskilling existing employees
- the demographics of apprentices, including gender and age category
- characteristics of the apprenticeships, including qualification level and subject area

83 % of respondents within Life Sciences stated they were currently training apprentices, versus 80 % of Industrial Sciences respondents. Overall, this amounted to 82 % of respondents across the whole sector.

82% surveyed are currently **Training Apprentices**

The data show that 1,114 apprentices were captured within this survey, with 565 based with Industrial Sciences employers and the remaining 549 training within the Life Sciences sector.

To better understand the current recruitment strategy of science industry employers in relation to apprentices, respondents were asked to state whether their organisation carries out an annual intake. Figure 2 shows the percentage of responding employers who have an annual intake of apprentices versus those who train apprentices as required on a more ad-hoc basis, comparing the sector-wide response with those obtained from each grouped industry sub-sector.

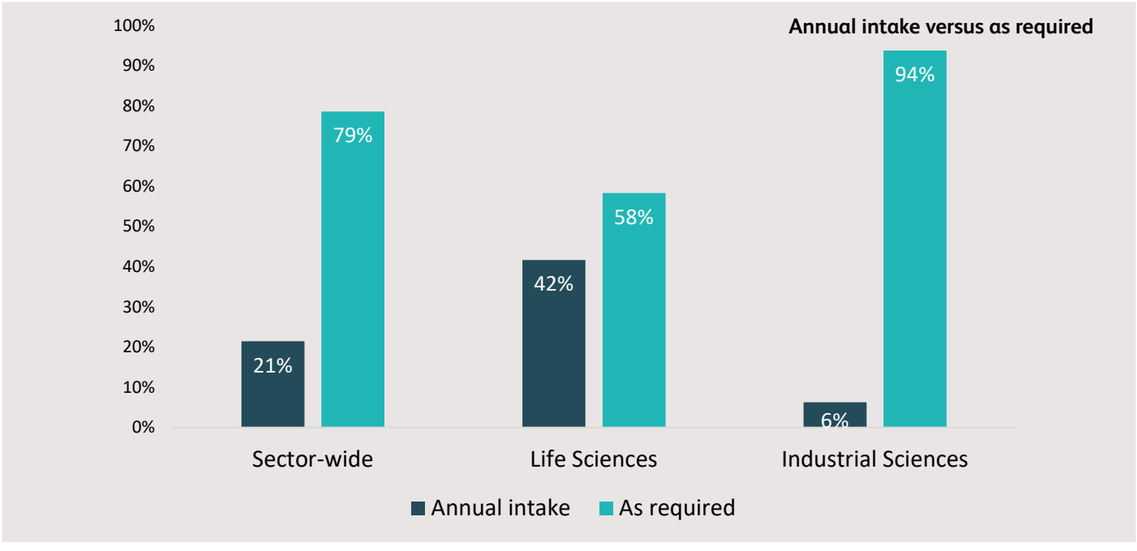


Figure 2: Comparison of the percentage of respondent employers that have an annual intake of apprentices versus those that train apprentices on an as required basis

From the responses obtained, it is clear that science industry employers generally prefer to train apprentices on an 'as required' basis, as opposed to having an annual intake. This figure has increased to 79 %, up slightly from 75 % in 2018. There is some differnence between the two sub-sectors with Life Sciences respondents much more likely to have an annual intake. This is, to some extent, reflective of the comparatively higher proportion of SME respondents within the Industrial Sciences population. Overall, 32 % of large organisations had an annual intake versus 0 % of SMEs.

As employers are able to utilise apprenticeship-based training to upskill or retrain their existing workforce, respondents were asked to provide the breakdown of their current apprentices as either 'recruited apprentices' or 'retraining/upskilling existing employees'. Figure 3 shows the proportion of apprentices who have been recruited to an organisation as an apprentice versus those who are existing employees upskilling or retraining via an apprenticeship, comparing the wider science industry sector to each grouped sub-sector.

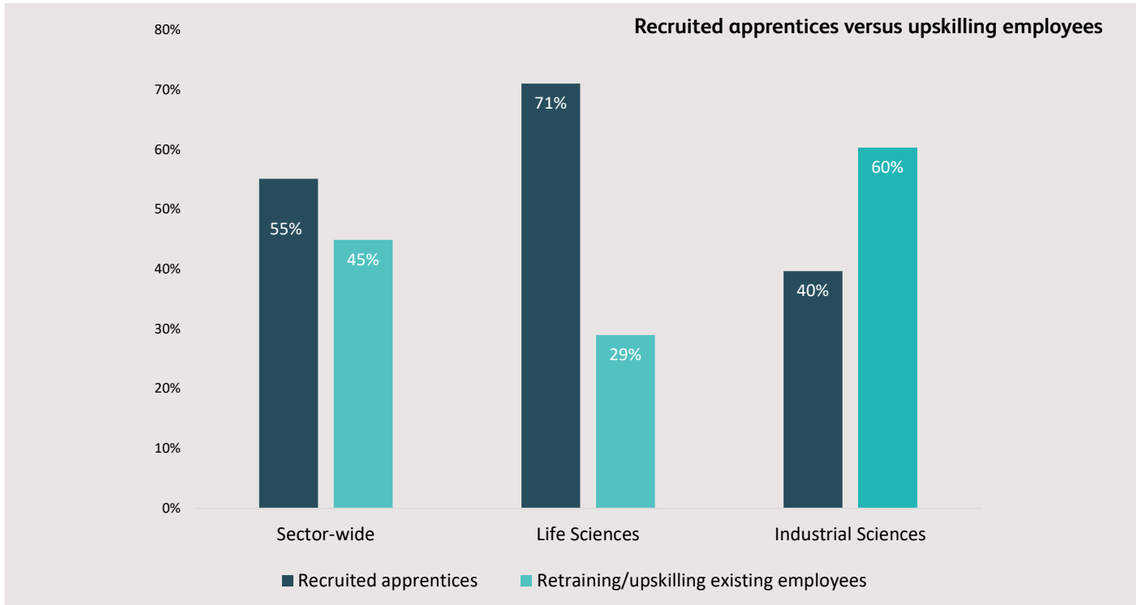


Figure 3: Comparison of the percentage of apprentices from responding employers who are recruited apprentices versus those who are upskilling or retraining existing employees

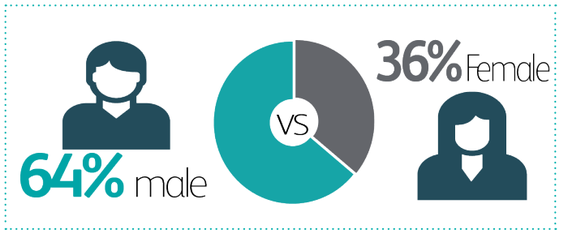
45% of apprentices are **existing employees**

55% of apprentices are **new recruits**

The data show that overall the science industry is continuing to utilise apprenticeship training in a balanced way to both bring in new talent (**55%**) and also to develop the existing workforce (**45%**). This has moved slightly since 2018 when the split was 60 % : 40 %, still in favour of newly recruited apprentices. This shift is in large part due to a change within the make-up of apprenticeships in the Industrial Sciences, increasing from a 51 % : 49 % split in 2018 in favour of newly recruited apprentices, to 60 % : 40 % in favour of upskilling now. Whereas Life Sciences companies have remained fairly consistent in their approach, with over 70 % of apprentices in the sub-sector being new recruits.

Interestingly, respondents were asked about their plans for the next 12 months, and forecasted starts are split 60 % : 40 % in favour of upskilling the existing workforce. Furthermore, the opportunity to 'upskill the existing workforce' was identified as the most important factor that would encourage respondents to increase the number of apprenticeships offered. These data therefore suggest that apprenticeships are now increasingly recognised as a key mechanism through which science-based companies are able to address their upskilling needs.

Recent data state that overall, the current science industry workforce is approximately 64 % male[6]. The information obtained in this survey provides an opportunity to observe how this gender balance compares with that for apprenticeships in the sector. The gender split of current apprentices captured within this survey closely matches the gender profile of the wider science industry workforce, with 64 % male versus 36 % female. This has improved since 2018 when the gender split stood at 69 % male versus 31 % female. For comparison, against the wider UK workforce, apprenticeship programme starts for the 2018/19 academic year across all industries were 49.9 % male and 50.1 % female[7].



There is, however, a marked difference in the gender profile between the Life Sciences and Industrial Sciences sub-sectors. It is important to take this into consideration when comparing the survey data. Recent data show that the Life Sciences workforce is currently comprised of 56 % male and 44 % female, whereas Industrial Sciences is 73 % male and 27 % female[8]. Figure 4 shows a comparison of the gender split between Life Sciences and Industrial Sciences for the apprentices captured within this survey. Again, the gender profile of the apprentices captured closely matches that of the respective wider workforce for each sub-sector.

Apprenticeships have traditionally been viewed as a school-leaver, entry level route into employment and therefore aimed at younger people; however, due to the greater availability of apprenticeship training in a wide range of subject areas and levels, along with the possibility of using apprenticeships to upskill, this is no longer necessarily the case. Figure 5 shows the age profile of apprentices captured within the survey, comparing the science industry sector as a whole with each grouped sub-sector category.

6. *Labour Force Survey 4 Quarter Average 2019, Office for National Statistics*
7. *Apprenticeship Statistics: England, House of Commons Briefing Paper, August 2020 Available at: https://researchbriefings.files.parliament.uk/documents/SN06113/SN06113.pdf*
8. *Labour Force Survey 4 Quarter Average 2019, Office for National Statistics*

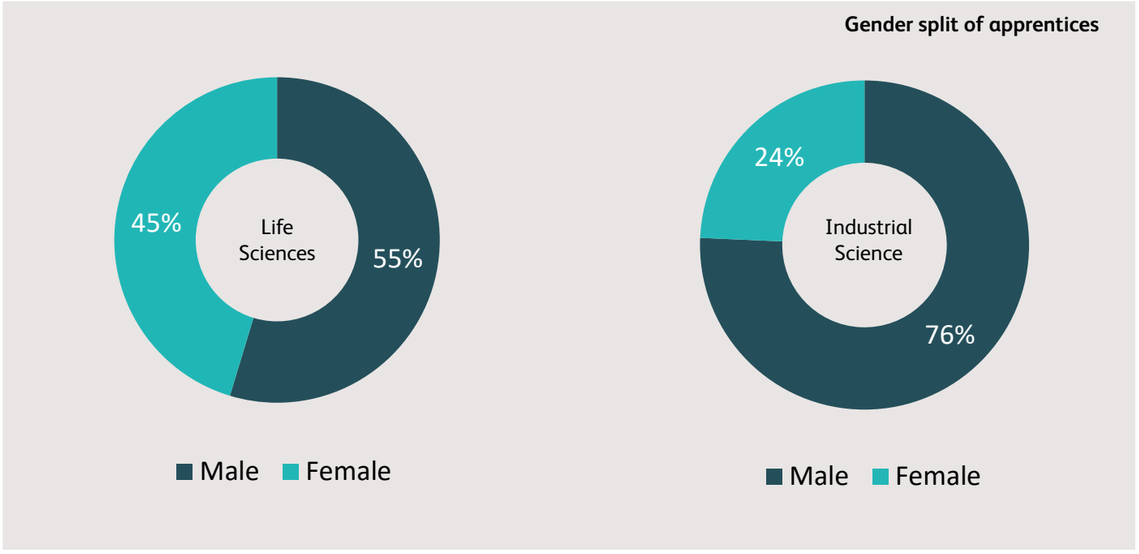


Figure 4: Comparison of the percentage of apprentices from responding employers who are male or female within each grouped sector category

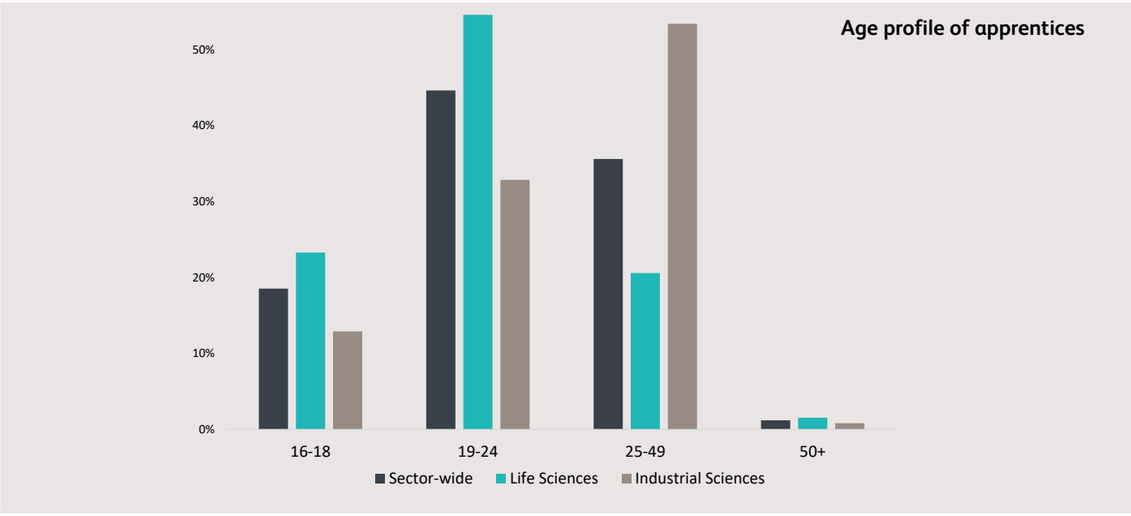


Figure 5: Comparison of the age profile of apprentices across the science industry sector and within each grouped sector category

Across the whole science industry sector, apprentices from responding employers aged 16-18 accounted for 18.6 % of the total of those carrying out an apprenticeship; 44.6 % were 19-24, 35.6 % were 25-49 with 1.2 % aged 50+. Overall, the age profile is largely comparable to the 2018 data with apprentices under the age of 25 again accounting for the majority.

Data for the 2018/19 academic year show that 55 % of apprenticeship starts across all industries were by people below the age of 25[9], compared to 63 % for the whole science industry. The age profile of apprentices in the science industry therefore has a higher proportion of young people when compared with apprenticeships across the entire workforce in England.

Differences can be observed within the age profile of apprentices between the two grouped sub-sector categories; Life Sciences has a considerably higher proportion of apprentices aged 16-24 with 78 %, while the majority of Industrial Sciences apprentices are aged 25+ at around 54 %. This is perhaps not too surprising considering the data show that Life Sciences apprentices are more likely to be newly recruited staff, while Industrial Sciences companies have a greater tendency to use apprenticeships to upskill their existing workforce.

Figure 6 compares the qualification level of the apprenticeship programme being undertaken across the entire sector, versus each of the grouped sector categories.

63 % aged under 25

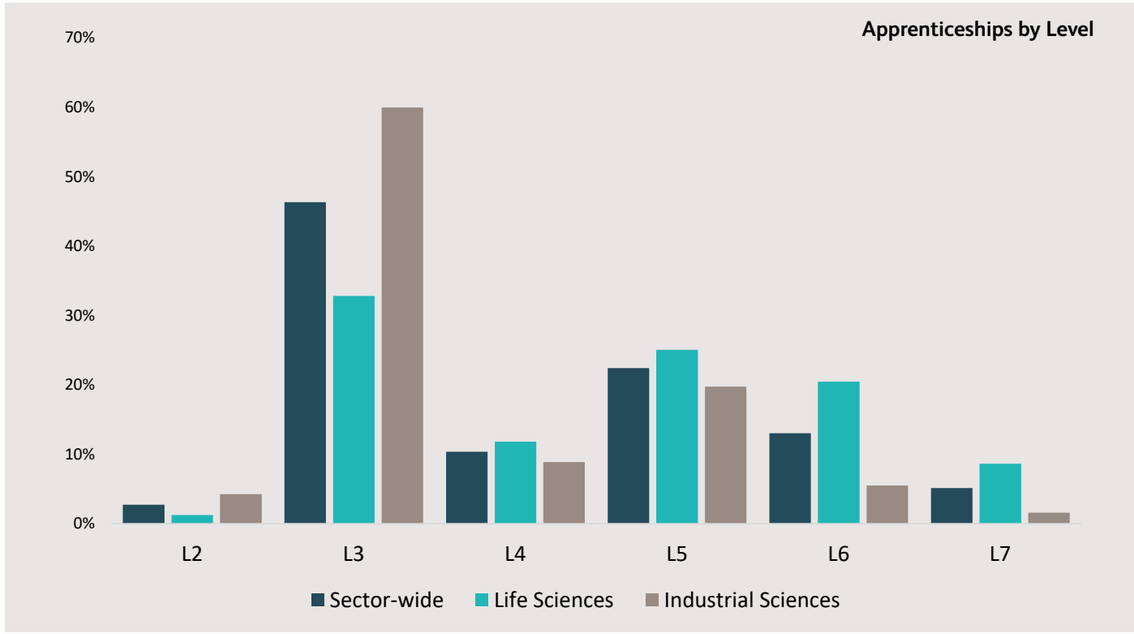


Figure 6: Comparison of the percentage of apprenticeships at each qualification level across the science industry sector and within each grouped sector category

9. *Apprenticeship Statistics: England, House of Commons Briefing Paper, August 2020, Available at: https://researchbriefings.files.parliament.uk/documents/SN06113/SN06113.pdf*

The sector-wide qualification level response data show that 3 % of current apprenticeships are undertaken at Intermediate Level (Level 2), 46 % are at Advanced Level (Level 3) and 51 % are at Higher Level (Level 4-7). In comparison, data for the 2018/19 academic year show Higher Level apprenticeship starts across all industries accounted for 19 % of the total[10]. As such the science industry now has a significantly higher proportion of Higher Level apprentices when compared with apprenticeships across all sectors in England. Additionally, approximately 18 % of apprenticeships in the science industry sector are at Level 6 or Level 7, which are bachelor's or master's degree equivalents, respectively. This is a noticeable shift towards degree (or equivalent) level apprenticeships, up from 6 % in 2018.

The Life Sciences sub-sector has an even greater proportion of Higher Level apprenticeships, with 66 % at Levels 4-7, compared to 36 % for Industrial Sciences. Similarly, 29 % of Life Sciences apprenticeships are at Level 6 or 7, compared with 7 % within Industrial Sciences. Only 1 % of apprenticeships within the Life Sciences sector are at Intermediate Level.

This clear shift towards Higher Level apprenticeships is encouraging as the sector seeks to address significant skills challenges in key areas such as Bioinformatics and Clinical Trials. Approximately 34 % of the degree (or equivalent) level apprenticeships captured within this survey were in core 'Science' subject areas. Table 3 shows a breakdown of the total number of starts across SIP-supported apprenticeship standards since 2015.

18 % Apprenticeships Level 6 or 7

Table 3: Number of apprenticeship starts across SIP-supported apprenticeship standards since 2015

	Academic year				
Standard	2015/16	2016/17	2017/18	2018/19	2019/20
L2 Science Manufacturing Process Operative	-	-	14	34	37
L3 Laboratory Technician	16	53	364	396	298
L3 Science Manufacturing Technician	23	22	135	236	273
L3 Science Industry Maintenance Technician	37	62	196	222	256
L5 Laboratory Scientist	2	84	178	130	6
L5 Technician Scientist	-	-	-	26	77
L6 Laboratory Scientist	-	-	23	98	121
L6 Science Industry Process/Plant Engineer	-	-	-	2	12
L6 Clinical Trials Specialist	-	-	-	1	19
L7 Research Scientist	-	-	-	-	29
L7 Bioinformatics Scientist	-	-	-	-	16
L7 Regulatory Affairs Specialist	-	-	-	3	23
Annual Total	**78**	**221**	**910**	**1148**	**1167**
Cumulative Total	**78**	**299**	**1209**	**2357**	**3524**

10. *Apprenticeship Statistics: England, House of Commons Briefing Paper, August 2020, Available at: https://researchbriefings.files.parliament.uk/documents/SN06113/SN06113.pdf*

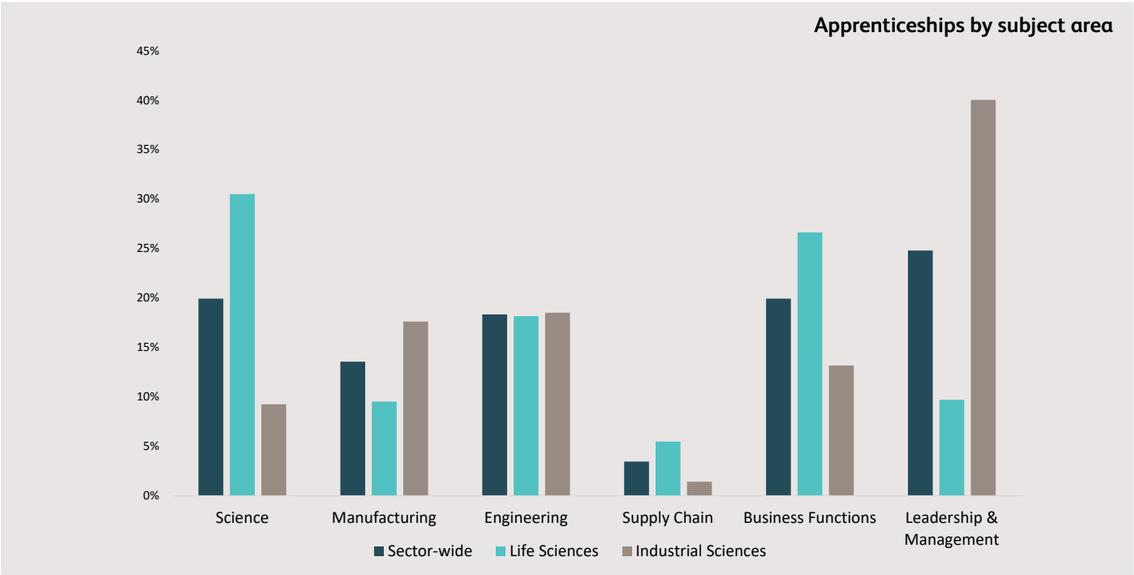


Figure 7: Comparison of the percentage of apprenticeships by subject area across the science industry sector and within each grouped sector category

Figure 7 compares the subject areas in which the apprenticeship programmes are being undertaken across the entire sector versus each of the grouped sector categories.

Across the science industry sector, the most prominent subject area in which apprenticeships are currently being undertaken is within Leadership & Management, at 25 %. Apprenticeships within functional roles of the business, including Sales, Marketing, Human Resources and IT make up a further 20 % of the total. This signifies a noticeable shift towards these two 'non-technical' subject areas. Combined they now account for 45 % of all current apprenticeships across the sector, up from 25 % in 2018.

Across the science industries, Science-based apprenticeships, including Laboratory Technicians and Laboratory Scientists, account for 20 % of total apprentices. Engineering apprenticeships account for 18 %, while apprenticeships within Manufacturing, including Process Operatives and Manufacturing Technicians, account for 14 %. Supply Chain apprenticeships account for 3 %.

There is some variation between the two grouped sector categories, with the laboratory-based, Science subject area accounting for 31 % of Life Sciences apprenticeships versus only 9 % for Industrial Sciences. In contrast, Leadership & Management apprenticeships account for 40 % of the Industrial Sciences total, whereas this figure is only 10 % for Life Sciences. Engineering and Manufacturing subjects account for 36 % of Industrial Sciences apprenticeships, down from 49 % in 2018, while the same subjects make up 28 % of Life Sciences, down slightly from 30 %.

Current use of the Apprenticeship Levy

The next section of the survey is focussed specifically around the Apprenticeship Levy. Respondents were asked to state whether their organisation currently pays the Levy, what their annual liability is and how much of this they were currently recouping to train apprentices.

Across the science industry sector, all responding large organisations stated that they are currently required to pay the Apprenticeship Levy, as did all SMEs with 100 employees or greater. In total, 91 % of all responding employers currently pay the Levy.

95 % of Life Sciences respondents are required to pay the Levy, versus 87 % for Industrial Sciences. This is attributable to a high proportion of large organisations captured within the survey, particularly within Life Sciences.

The total Apprenticeship Levy raised by all responding employers equalled around £23.3m, up from £22.6m in 2018. The SIP has previously approximated that the total annual Apprenticeship Levy raised in the sector is circa £60m[11].

Of the £23.3m total Apprenticeship Levy liability across the sector, it was reported that around £6.5m is currently being recovered to spend on apprenticeship training, equating to 28 %. This is up from a 13 % Levy recovery rate in 2018. When applied to the wider sector, we estimate that science industry companies could be missing out on £43m of support for apprenticeship provision.

In 2018, SIP also reported that 28 % of Levy paying companies were not recovering anything from their Levy liability. Encouragingly, this figure has dropped to around 12 % in 2020.

Analysing each grouped industry sub-sector separately, the total Apprenticeship Levy liability of Life Sciences respondents equalled around £17.1m, up from £13.3m in 2018; within Industrial Sciences this amount totals around £6.2m, down from £9.3m two years ago. This is due to a drop in the number of large Industrial Sciences respondents this time, whereas a comparable number of large Life Sciences companies have still been captured. Figure 8 shows the proportion of recovered and unrecovered Apprenticeship Levy liability for each grouped industry sub-sector.

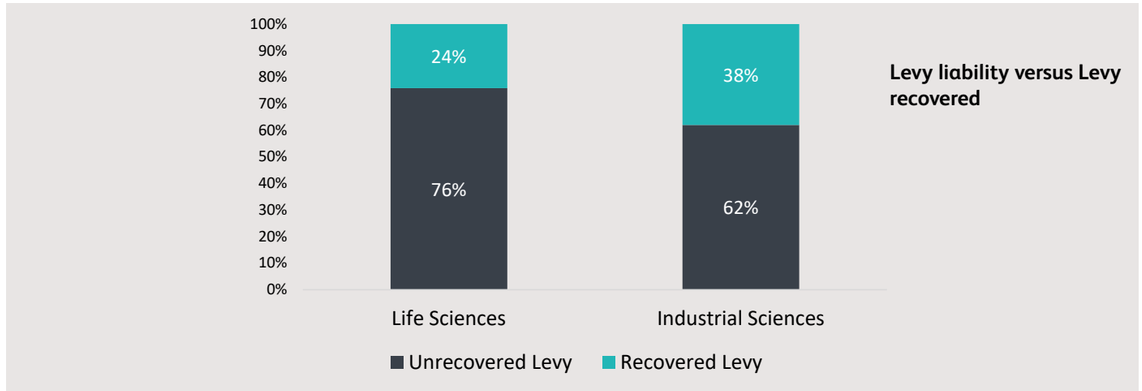


Figure 8: Comparison of the proportion of the total recovered and unrecovered Apprenticeship Levy liability within each grouped sector category

11. Total annual Apprenticeship Levy raised calculated using information available via DueDil (https://www.duedil.com)

Of the £17.1m Apprenticeship Levy liability for responding Life Sciences employers, around £4.1m of it was reported as recovered for apprenticeship training, equating to 24%. This is up quite significantly from around 6% in 2018. Within Industrial Sciences companies, almost £2.4m of the £6.2m Levy liability was reported as recovered, totalling around 38%. This is up from 23%, two years ago.

Government data[12] show that for the year ending 31 March 2019, £2.8bn of Apprenticeship Levy was raised across all sectors, with £864m[13] subsequently drawn down by employers for apprenticeship training, equating to around 31%. The relatively low recovery rate for science industry companies is therefore comparable to the wider economy. Government have previously stated that any unspent funds will be reinvested for apprenticeship training, although with no guarantee they will be retained within the contributing sector.

The Levy liability of the SME employers totalled around £230,000, or 1% of the total liability accounted for within this survey, at an average of approximately £33,000 per organisation. Levy recovery amongst this SME population stood at 96%, with only £9,800 being unrecovered. This compares to a total Levy recovery by large organisations of 27%.

Across the whole science industry sector, 95% of current apprentices from responding employers were reported as being funded via the Apprenticeship Levy, up from 57% in 2018. In the 2018 report it was proposed that the likelihood was that a proportion of apprentices were still being paid for by previous government funding arrangements. These legacy funding streams have now concluded and correspondingly we have seen a natural increase in Levy utilisation. Consequently, the vast majority of apprenticeships within the science industry sector are now being funded by the Apprenticeship Levy.

Across the sector there are a number of large employers who are each liable to pay an annual Levy in excess of £1m. Combined, these companies currently train 76% of the apprentices captured within the survey, with half of them already having well-established annual intakes. Despite this, the Levy recovery rate for these organisations stands at around 25%. These large organisations therefore account for around 80% of the total unrecovered Levy across the sector, with approximately £13.4m of potential funding being lost from them each year. These companies would need to train an unfeasible number of apprentices on a regular basis to enable them to spend all of their Levy.

In contrast, smaller Levy paying companies with annual liabilities of less than £100,000 had a much higher rate of recovery, at around 54%, with more than half of them recovering their entire Levy payments in full. These companies disproportionately identified 'General business growth / increased demand for staff' and 'Difficulty in recruiting experienced staff' as key factors that would encourage them to take on more apprentices.

The proportion of Levy and non-Levy funded apprentices for each sub-sector category is shown in Figure 9.

The data show a slight variance between the sub-sectors with 98% of current apprenticeships for Industrial Sciences respondents now being funded via the Levy, versus 93% in Life Sciences.

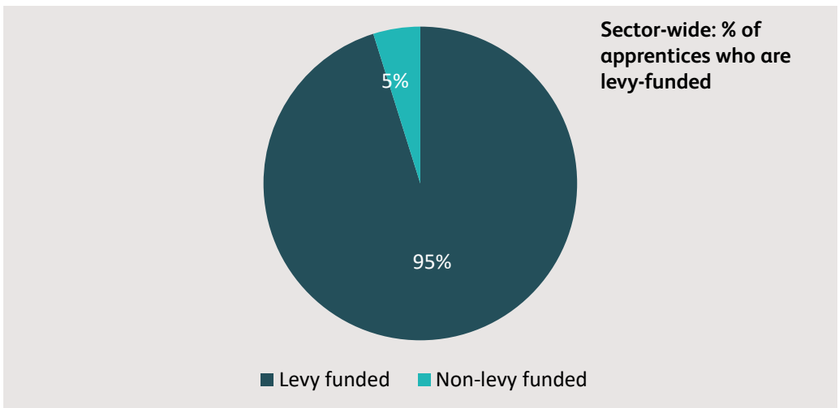


Figure 9: Proportion of total current apprentices (Sector-wide) who are funded via the Apprenticeship Levy versus those who are not

12 *HMRC annual report and accounts: 2018 to 2019*
Available at: https://www.gov.uk/government/publications/hmrc-annual-report-and-accounts-2018-to-2019
13 *https://www.fenews.co.uk/featured-article/40775-apprenticeships-2020-has-the-demise-of-the-levy-been-much-exaggerated*

Future planning

The final section of the survey set out to forecast the future uptake of apprentices within the science industries, including how many new apprentices would be recruited and how many existing employees would be enrolled on apprenticeship training for upskilling. It also set out to understand any changes that employers would like to see that would encourage them to offer more apprenticeships.

The proportion of responding employers who stated that they intend to train new apprentices within the next 12 months versus those who do not is shown in Figure 10.

In total, 86% of respondents stated that they do intend to start new apprenticeship programmes in the next 12 months, either by hiring new apprentices, or by using a combination of hiring new apprentices and developing their existing workforce.

The number of apprenticeship starts within the next 12 months, including recruitment of new apprentices or upskilling the existing workforce, is forecasted as 498 in total, 283 within Life Sciences respondents and 215 within Industrial Sciences. Of the forecasted apprenticeship starts, around 9% are with SMEs.

Respondents were asked to state how many apprentices had started training between April 2019 and March 2020, as to compare with their plans for upcoming year. Across the sector, planned starts for the following 12 months are 27% lower than actual starts in the previous year.

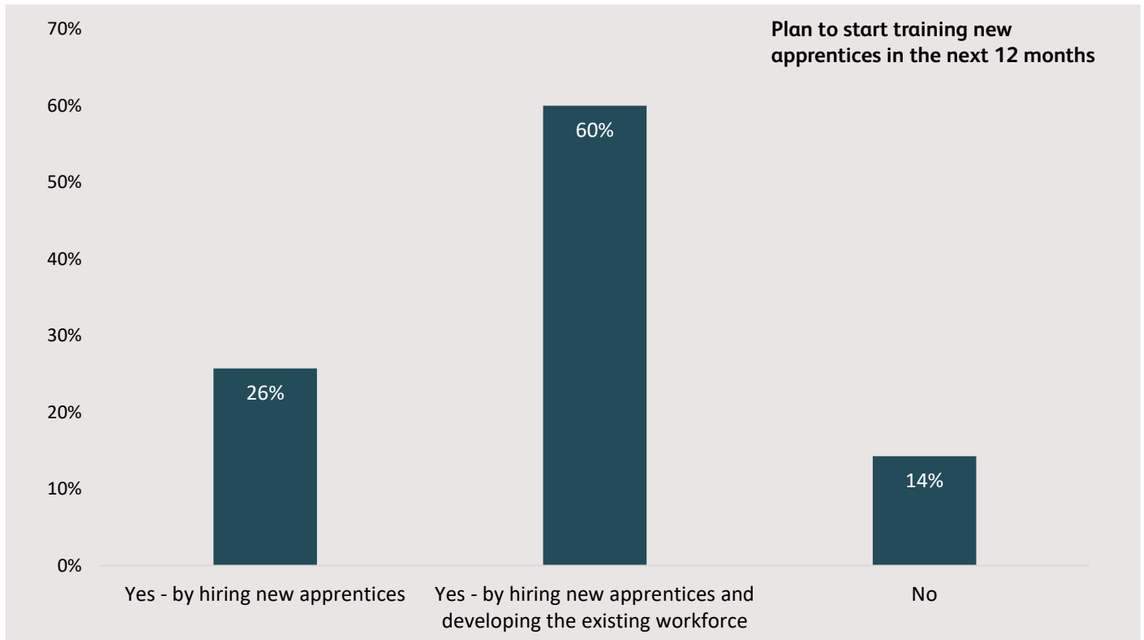


Figure 10: Breakdown of the respondent employers' intentions to train apprentices in the next 12 months

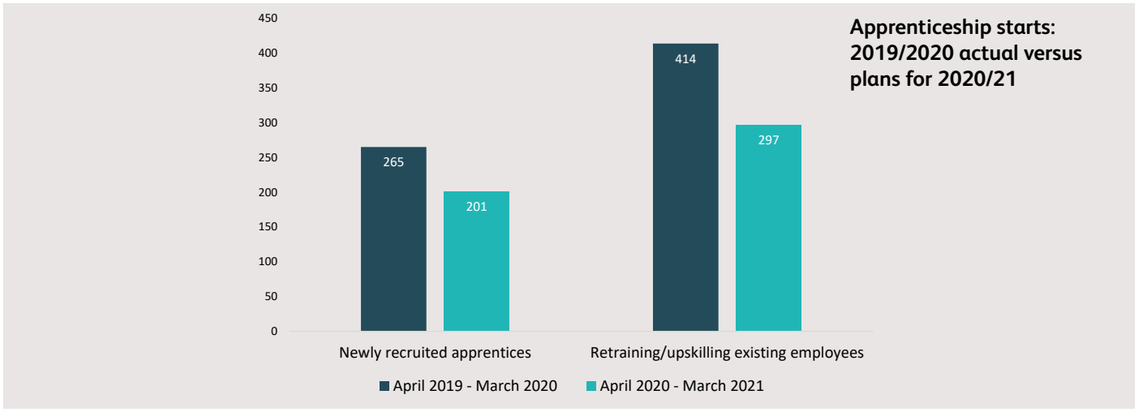


Figure 11: Comparison of actual apprenticeship starts in previous 12 months versus planned starts in the next 12 months

A comparison of the data for actual starts of both newly recruited apprentices and upskilling existing employees, versus the forecasted plans for next year is shown in Figure 11.

There is, however, some variation between the sub-sectors, with Life Sciences companies actually forecasting a slight increase in starts of around 3 %. Within Industrial Sciences, planned starts are down by 47 %. It is worth reiterating that the data were collected during the height of the pandemic, and crucially before the positive news regarding potential vaccines. It is also assumed that any significant impact that the pandemic has on recruitment will be limited to the short term, and would not necessarily alter the overriding direction of apprenticeships within the industry.

Recent data for the 2020/2021 academic year[14] show 608 starts on the 12 SIP-supported apprenticeship standards in Q1 (August 2020 – October 2020), down 17 % compared to the same period in 2019. However, despite an overall drop in activity, Higher Level apprenticeships have continued to increase. At Levels 5-7 there were 236 starts, an increase of 17 % compared to Q1 2019/2020, whereas Levels 2-3 have decreased by nearly 30 %. It is also worth noting that Q1 is typically when the majority of starts on SIP-supported apprenticeship standards are observed, accounting for between 63 % and 73 % of the annual total in the previous three academic years.

For comparison, over the same period, starts across all UK apprenticeships had decreased by 36.5 %, highlighting some resilience within the science industries against a challenging economic environment.

Responding employers were also asked to state what factors would encourage them to increase the number of apprenticeships offered in the future. The top 3 responses were as follows:

- 65 % would in order to upskill their existing workforce
- 50 % would if they experienced general business growth/ increased demand for staff
- 32 % would in order to claim back Apprenticeship Levy payments

71 % of Life Sciences respondents reported that the ability to **upskill their existing workforce** using apprenticeship training was important to them. Combined with 60 % of Industrial Sciences companies who said the same, this was the most important factor overall. However, there was also some clear differences between the two sub sectors. The most important factor to Industrial Sciences respondents at 65 % was if their **'business experienced growth/ or an increased demand for staff'**, whereas this was much less of a concern for Life Sciences at 29 %. The third most important factor for Industrial Sciences was if there was **'lower training costs/ additional financial assistance'**, whereas no Life Sciences respondents identified this as a factor for their business. The second most important factor for Life Sciences companies was **'in order to claim back Apprenticeship Levy payments'** at 43 %, followed by a **'wider range of apprenticeship standards available'**, and if there were **'options to recruit apprentices more easily'** both at 36 %.

Broadly speaking, Life Sciences respondents were more concerned with the availability and accessibility of apprenticeships, while Industrial Sciences respondents placed greater value around their affordability. Combined with the forecasted 47 % drop in planned starts for next year, this serves to highlight the particular vulnerability of apprenticeships within Industrial Sciences.

14. Department for Education - National Statistics: Apprenticeships and traineeships: January 2021

RECOMMENDATIONS

Since the initial recommendations made in 2018, there have been a number encouraging developments within the sector. A wider range of industry specific apprenticeship standards are now available and subsequently we have seen a rise in the number of Higher Level & Degree Level apprentices being trained. The recent data also highlights the multifaceted nature of apprenticeship training with companies increasingly using them to upskill their existing employees, in a growing variety of disciplines. However in order to maintain and deepen this momentum, it is important to take stock of the areas that still need attention.

Covid Impact

Responses to this survey were collected during the unprecedented period of the COVID-19 pandemic. Unlike some industries, the science industries largely continued to operate throughout, observing the key requirements for social distancing and following employment safety guidelines. The impact of this in terms of apprenticeship activity was raised in subsequent SIP meetings. One key issue was that many of the roles that support the selection, recruitment, onboarding and mentoring of apprentices were now based from home, resulting in significant changes to practices to become virtual. Indeed, several cohorts of new apprentices were recruited using a fully remote process. This included carrying out virtual assessment centres, interviews, site tours and Q&A with current apprentices.

For some smaller businesses however, starting and inducting new employees was an added burden at a time when they were also introducing new physical distancing measures and ways of working. As a result we saw some delay in activity in terms of recruitment of new apprentices and challenges remain in roles which require access to a physical plant and equipment on site.

One potential solution is the suggestion of 'front loading' apprenticeship training, with government having recently committed to reviewing its suitability for different sectors. This is an important short-term consideration, as it will enable the industry to continue recruiting apprentices, with new starters first studying off-the-job and, when restrictions are eased, switching their focus to the more role-specific aspects of their learning.

Levy flexibilities

The current rate of the Apprenticeship Levy was determined in 2016 based on anticipated numbers of learners, a government target of 3 million apprenticeship starts and a consideration of previous apprenticeship funding rates. It was part of a wider recognition that in order to increase productivity in the UK, companies needed to invest more in skills, particularly off-the-job training.

There is no particular rationale that suggests the current rate of 0.5 % is necessarily an appropriate level. There are examples throughout the industry of companies who will never be able to utilise even half of their Levy and equally some who fall in and out of scope of the Levy on a monthly basis. The Levy is a blunt tool designed to encourage UK companies to invest in skills and in particular off-the-job training, with the apprenticeship programme and its 20 % off-the-job element, currently being the only eligible programme. In considering how the system may work more effectively, a potential solution is to reduce the overall percentage of the Levy, or indeed to allow a percentage of the Levy to be separated and utilised for non-apprenticeship funding. This could be particularly important in enabling businesses to use what was effectively their money to fund technical, data and digital transformation training. Careful consideration would need to go into ensuring that the programmes were appropriate and that there was a mechanism for accounting for the use of what becomes public money, but as an industry this is something that could be designed and administered relatively easily.

The ABPI have pointed out that administratively there is a need for the Levy funds to be pooled when mergers and acquisitions take place, something prevalent in the Life Sciences sector[15].

The sector reflects both large business and SME's who pay the Levy; there is the potential for businesses who undertake longer term programmes, and whose Levy contributions are marginal, to lose out when funds are effectively taken back after 24 months.

In summary, the ambition is to promote apprenticeships as a viable means of addressing the significant skills challenges the sector faces over the coming years. In order to achieve this we must ensure that every science company has the appropriate level of support available to deliver on their training needs. The SIP calls on the industry to take a more collaborative approach in attempt to realise this ambition.

15. ABPI: Apprenticeships in the Life Sciences sector, February 2021

LEVY

The SIP sets a target for the sector's Apprenticeship Levy recovery rate to surpass the national average for all industries by 2022 – currently 31 %

Overall, engagement with apprenticeships across the science industries has steadily improved since 2018. The vast majority of apprentices within the sector are now funded via the Levy, and as a result the Levy recovery rate has more than doubled to 28 %. The sector-wide Levy recovery rate continues to be a useful metric that fundamentally evidences company engagement with the system. Helping individual companies to unlock more of their Levy payments therefore remains a key aspect of the overarching ambition to boost apprenticeship numbers and deliver high level skills for the sector. A realistic target for the sector then should be to track and surpass the average Levy recovery rate for all industries, which currently stands at 31 %.

PLEDGE

The SIP asks all companies with excess Levy, and all SMEs with the capability to train apprentices, to commit to registering for the government's new online matching service

The ambition is for science companies to make better use of the option to transfer up to 25 %. This presents an opportunity for large organisations to collaborate with SMEs, or their supply chains and associated businesses, to maximise the amount of apprenticeship funding available throughout the industry. From August 2021, employers who pay the Levy will be able to pledge specific amounts of their funding as being available for transfer. Also being launched is a new online service to match Levy payers with SMEs that share their business priorities. It is noted that some SMEs currently lack the infrastructure to be able to take on apprentices. Much work is needed therefore on a sector basis to inform and advise smaller businesses on the apprenticeship programme and its opportunities, with many companies hoping to take on apprentices for the first time. The SIP asks all companies with excess Levy, and indeed all SMEs with the capacity and ambition to train apprentices, to pledge to engage with the new function and register for the online matching service when it launches.

COLLABORATION

The SIP will be launching a new 'Apprenticeship Strategy Group' in 2021 to deliver practical support and guidance to help companies access more of their apprenticeship funding

Our vision is for '*Every science business to embrace apprenticeships as industry designed, accessible, high quality, relevant programmes to upskill and recruit, enabling growth, developing (scientific and technical) capability and increasing productivity as a return on investment from a flexible, fit for purpose Levy.*'

The SIP will be launching a new Apprenticeship Strategy Group in February 2021 which will bring like-minded companies together to take responsibility for shaping the apprenticeship agenda within the science sector. Together the group will oversee the strategic delivery of the Apprenticeship Strategy in 2021.

CASE STUDY: FROM GSK APPRENTICE TO PhD STUDENT

After completing her A Levels, Hajra Bibi had a choice to make between University and an Apprenticeship. Hajra, 25, decided on a Level 6 Laboratory Scientist Degree Apprenticeship at GlaxoSmithKline (GSK) before undertaking a Master's Degree and now has begun her PhD in Life Sciences at the University of Dundee. In this case study, she describes her unconventional journey and hopes to inspire others to do the same.

Why did you decide to do an Apprenticeship?

When I was at school, completing my A Levels, apprenticeships were a huge unknown and they weren't really pushed as an option. However, my school was relatively close to a Unilever site and they'd just enrolled two students on to their apprenticeship scheme, who had been in the year above me. One day, they came back into school and gave a presentation about their time at Unilever and we were given an opportunity to speak to them directly. That is what first sparked my interest in the apprenticeship route, as I was unaware that apprenticeships existed in the STEM field. I've always preferred to be more hands on and enjoyed the practical elements of my A Levels so that's when I realised the apprenticeship route was right for me.

I had a lot of pressure from family, as I was the first generation to pursue Further Education so they were keen for me to go to University, as neither of my parents had done so. At the start, I'm not sure they were fully convinced that the apprenticeship route was the best option for me. Once I explained the wide range of benefits, that I'd be gaining industry experience while still completing a degree, they were very supportive.

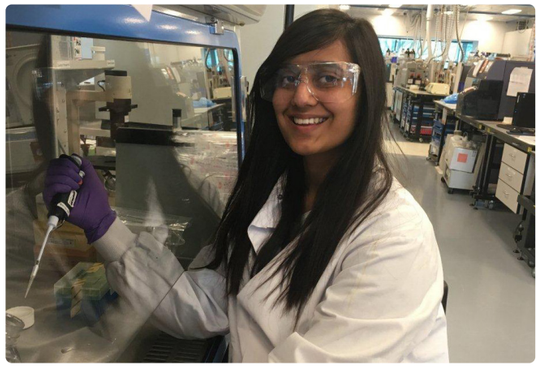
Once I decided on the apprenticeship route, I applied to lots of science led companies and I successfully joined the GSK Stevenage Site in their BioPharm Discovery Department.

Tell me about your experience of being an Apprentice at GSK?

When I joined GSK in 2014, I was the first of two Degree Level Apprentices for the BioPharm Department so it was a learning curve not only for me, but the team at GSK too. I joined GSK at 18, walked into the lab with no experience and because of the negative stigma around apprenticeships, I was afraid that I wouldn't be given any responsibility. However, this was not the case as very quickly I was put on to programs, conducting experiments and presenting them back to different teams. I felt extremely valued and that I had a role to play within the department.

I had four days working in the lab and one day to work on my degree, it was tough at times, to balance work, university and life, but I had incredible support from the team at GSK. For example, when it was exam season, my supervisor would reduce the level of lab work that I had to ensure that I had opportunity to excel, not only in the workplace but academically too.

Another aspect of my apprenticeship that I really enjoyed was the Development Courses. Each year, apprentices across all GSK sites met up for a week in one location and went through a detailed, uniquely designed development course. Building up soft skills, such as: presenting, leadership, change management, and working under pressure. These courses allowed me to interact with apprentices from other parts of the company and developed myself to be able to take on higher roles.



What did you learn during your time as an apprentice?

When I first began my apprenticeship, I was very quiet and wanted to blend into the background. I wouldn't contribute much to meetings and speaking in those environments made me very nervous. However, I was always pushed to step outside of my comfort zone, I grew into the role and also in confidence. At the start, it was a steep learning curve but now looking back the skills I developed while completing my apprenticeship were incomparable. Each year I rotated and joined a new team within the BioPharm department, learning a whole new set of scientific techniques and gaining a deep insight to the antibody drug discovery process. I was taught an abundance of laboratory skills and soft skills, that will stay with me throughout my career.

What advice would you give to other people who want to follow your career/education route?

My advice now is to aim high, and don't be afraid to reach out to people that are there to support you. Also, when you're first starting out, take hold of opportunities that arise. Sometimes you yourself may be unaware of the benefits.

Follow your interests, reach for it and you will achieve it.

What do you feel were the advantages of doing an apprenticeship over other education/ training programmes?

When I completed my apprenticeship at GSK, not only did I gain a BSc in Applied Bioscience from the University of Kent but also five years of industry experience, and that is unparalleled to anything I would've gained, had I chosen the full-time university route. I came away with a degree and no university debt, which can be a huge issue for many young people when deciding on which route to take.

The network that I managed to build during my time as an apprentice was great, everyone I met while at GSK were so supportive and went above and beyond to help me.

What advice would you give to other young people interested in an apprenticeship?

I think it's really important to follow an interest, even if it's a small inkling. Your work experience will be focused on the apprenticeship subject, so everything you're learning and studying will be concentrated on that area. So, for me it was Biology in general, which I really enjoyed while at school. Follow what you're interested in and you'll have a blast!

After Hajra completed her Degree Apprenticeship, she applied to undertake a Master's Degree at the University of Oxford after great support from her supervisors at GSK.

Three years into my apprenticeship, I was promoted to Associate Scientist. I continued learning so I could complete my degree apprenticeship. During that two-year period, I was paired up with a mentor by the GSK Early Talent Team. The early conversations I had with my mentor were focused on what my next steps would be after I completed my apprenticeship.

I really enjoyed my third year rotation which was in the Immunology Lab, and I think this is what I wanted to pursue. So in conversation with my mentor, I decided to apply for a Master's Degree, as I only had one year of experience in the field of immunology and I thought it would be great to learn more. I identified a course at the University of Oxford and it looked like the perfect fit, so I showed the course to my mentor, Wendy, and wondered if there were similar options that I could complete part time as I still wanted to work for GSK. At that point, Wendy challenged me and said, why don't you apply for the course at Oxford? I was encouraged to aim high, which I wasn't prepared to do at that time.

I was accepted on to the MSc in Integrated Immunology at the University of Oxford and that was a great moment! But I was unsure on what to do, as I had amazing job at GSK that I didn't want to give up. As the MSc I'd applied to was aligned very closely with GSK own research ambitions going forward, I was sponsored by the company to undertake the degree.

Why did you choose to pursue a PhD?

After I finished my Master's, it became important for me to develop as a free-thinking scientist, someone who can string together the theoretical with the practical. I had become well equipped to the practical side through my apprenticeship, but perhaps not so much the theory. The best opportunity to do so is by doing a PhD because a PhD allows you to own your research project. I found a love of immunology while doing my Master's and wanted to purse that further, so a PhD in the area of immunology was the ideal next step.

How has your time been pursuing a PhD?

So far, it's been really great. I'm very pleased with the people around me, I think I've been lucky in that sense. My PhD supervisors are great scientists and I know I will learn a huge amount from them. Despite all the COVID restrictions, everyone around me has gone above and beyond to make sure I feel settled in a new area. I'm still able to go into the lab to conduct experiments and I'm really looking forward to getting my project off the ground. I'm very excited to seeing how it will progress!

How did your employer (GSK) support you?

The support from GSK has been phenomenal, they've supported me throughout my BSc, MSc and now as I pursue my PhD. Identifying a Principal Investigator (PI) can be a tricky aspect when you're looking to do a PhD. I was put in touch with my PI, a world-renowned immunologist, by Malcolm who is responsible for all academic liaisons with GSK. My project is a collaboration between GSKs Protein Degradation team and the Division of Signal Transduction Therapy (DSTT) at the University of Dundee. It's really the perfect pairing, as I get to fulfil my ambitions to develop as a researcher and work with some amazing scientists, whilst knowing that my research project will help identify new ways to create medicines and treat disease.

There are many people who have been instrumental in my journey, too many to name, but I am incredibly grateful to all my supervisors, managers and mentors at GSK.