Responding to higher technical skills needs

Final report

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Learning and Work Institute
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In 2024, Learning and Work Institute (L&W) was commissioned by the Gatsby Charitable Foundation to carry out research to better understand employer and employee decision making about training and the development of higher technical skills, providing insights and evidence to inform longer-term thinking about how policy can support changing skills needs and drive productivity.

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Economic change, including advances in technology, automation and the transition to net zero, is impacting on the jobs available and skills required. With 80% of the 2035 workforce having already left full-time education and people working longer, it is vital that workers can upskill and reskill throughout their careers. Only one in ten adults currently have a level 4 or 5 qualification as their highest level of qualification, with people who don't opt to go to higher education often struggling to progress at work.

There is limited knowledge about how UK employers make decisions about training and how employers and workers are responding to the need to upskill and retrain. This project aimed to better understand employer and employee decision making about training and the development of higher technical skills[1], providing insights to inform how national and regional policy can support changing skills needs and drive productivity.

In England, how well the Lifelong Learning Entitlement and Growth and Skills Levy support the delivery of the UK's Modern Industrial Strategy depends on the extent to which adults and their employers choose to invest their time and money in upskilling in key areas. As devolution progresses, Mayoral Strategic Authorities will also gain greater power over what education and training is offered in their regions, and how to incentivise uptake.

The project took a sector specific, place-based approach, focussing on advanced manufacturing and construction in the North East and the East Midlands mayoral strategic authority areas. This approach was taken to give a focus to the research; findings are representative of both regions and sectors. Findings that relate only to a specific region or sector are highlighted. Qualitative research was carried out between Autumn 2024 and Spring 2025 with employers who have a high level of engagement with skills development, alongside employees and industry and policy stakeholders.

Importance of higher technical skills to employers

- Employers taking part in the study recognise the importance of higher technical skills and there is a high demand for them. They are seen as being vital to core business, to ensuring that work is carried out to a high standard, for advancing technological capability, for competitiveness, and to achieve business growth.

- Key issues around meeting these skills needs are a limited pipeline of workers with the right skills, loss of skilled workers due to an ageing workforce and retention of highly skilled staff.

[1] For this project, higher technical skills have been defined as the advanced, specialist skills developed through level 4 and 5 qualifications (including Higher Technical Qualifications) in areas such as manufacturing and engineering, digital and IT, healthcare science, and construction.

Meeting higher technical skills needs

- Most employers involved in the research focus on upskilling internal staff, rather than recruiting new talent. Employers use a variety of training routes including in-house training and mentoring, external short courses, apprenticeships and National Vocational Qualifications (NVQs).

- External training is generally preferred where accreditation is important and employers report that this is widely used where it is necessary for employees to gain a named qualification that is well recognised and regarded in the sector. Attainment of accredited qualifications reassures employers of the quality of work and that employees can undertake specific tasks with minimal supervision. These qualifications are also important to evidence to clients the skill set of the workforce.

- Internal training is most likely to be used by employers that operate in niche sectors, with employers developing bespoke training programmes. It is also more common in large employers who have sufficient resources to implement it.

- Cost and staff time are barriers to accessing training, especially among smaller employers.

Decision making on skills development

- Large companies tend to use systematic processes for assessing skills and development needs, whereas small companies tend to be more reactive to development needs, often in response to a skills gap when undertaking a new piece of work. Small employers are also less likely to have dedicated learning and development staff which makes proactive identification of skills needs more challenging.

- Employers highlight that decision-making on skills development is largely employer-led, but often consider proactive training requests from staff.

- Employees who took part in the research generally feel involved in decision making and work with colleagues to identify skills gaps. They seek peer and line manager input on suitable training options.

Information and guidance about higher technical skills training

- To source training for staff, employers said they typically rely on existing connections with training providers, or search online to find new training provision. This limits options for sourcing training for smaller employers who tend to have smaller professional networks.

- Larger employers explain that they are generally satisfied with the level of access they have to information on skills training, however some smaller employers experience difficulty accessing information and guidance.

- 'Skills terminology' is a barrier to employers understanding the range of training opportunities available to them. Employers say that a centralised hub of resources about skills training would be beneficial.

Suitability of higher technical skills training

- Some employers have concerns about the quality and relevance of accredited external training and identified gaps in provision.

- Using levy funded apprenticeships is commonly seen as a challenging solution to meet skills needs due to length of programmes. Short form or modular courses have the potential to be more beneficial to both employers and employees. Longer programmes, such as apprenticeships, can also lack focus on the specific skills some employers need for their role. Employers also explained that apprenticeships can include content that is not directly relevant to an employee's role and can sometimes not develop specialist skills.

- Some employers said they face challenges in finding accredited training courses locally that meets their needs.

- Training availability is limited for niche or emerging technical skills fields, and employers feel that training offered by providers often lags behind innovation and technological change.

- Some employees report that apprenticeship and Higher National Certificate (HNC) programmes are directly relevant to their role, and they are able to apply skills learned regularly. But many report that these programmes are often a bigger time commitment than anticipated.

Relationship between higher technical skills development and career progression

- Both employers and employees taking part in the research agree that higher technical skills training is directly linked to career progression, but higher level roles are not always available, especially in small firms. Employees recognise that upskilling is important for professional success.

- Younger workers show greater interest in developing higher technical skills, presenting a challenge for employers with an ageing workforce.

How employees seek career advice and guidance

- Employees involved in the study are generally positive about the value their employer placed on personal development. Those working for larger companies generally have better access to resources and support to aid their career decision making.

- Apprentices say that they value advice from experienced colleagues. Employees are generally not aware of the National Careers Service and do not use this as a source of career advice and guidance.

Funding higher technical skills training

- Most employers interviewed believe that they should be primarily responsible for funding higher level skills training, with some suggesting that government could contribute additional funding for some programmes, particularly supporting SMEs to gain access to funding.

- Employers also feel that government, both central and regional/local, should consult employers on their skills needs.

- Generally, employees believe that their employer should be responsible for facilitating their training. Employers in this research say that agency workers are an exception to this, as they need to fund their own training.

Impact of devolution

- Policy stakeholders identified strategic authorities (SAs)[2] as having the potential to play a local coordination role in engaging with individual employers directly and directing funding towards provision that meets these needs. SAs are seen as being better suited than central government to address local skills needs.

- Employers rarely mentioned the impact of devolution on their approaches to upskilling, but those with connections to their strategic authority said they are a valuable resource for information about training opportunities.

Implications of the research findings

- Policymakers should maintain a focus on higher technical skills. There may need to be some refocus of policy from the supply side of provision to demand.

- The Lifelong Learning Entitlement may have limited impact on upskilling without additional careers support for individuals, particularly for older employees.

- Growth and Skills Levy reforms should prioritise SMEs and the self-employed, as they have less access to affordable, relevant provision and trusted information.

- Education and training options need much better signposting, with greater use of 'employer-friendly' skills language.

- Career progression pathways need to be much clearer to employees. Structured progression pathways linked to accredited provision remain underdeveloped.

[2] The English Devolution and Community Empowerment Bill will create in law a new category of 'Strategic Authority' in England which will be used to devolve powers away from Westminster to local government (English Devolution and Community Empowerment Bill: Guidance - GOV.UK)

1 Introduction

1.1 Background and context

Economic change, including advances in technology, automation and the transition to net zero, is impacting on the jobs available and skills required. With 80% of the 2035 workforce having already left full-time education and people working longer, it is vital that workers can upskill and reskill throughout their careers [3]. In addition, supporting more people to progress at work could free-up entry-level jobs for young people and unemployed people, helping to achieve the Government's ambition to reach an 80% employment rate.[4]

The UK is falling behind internationally. It is on track to be 29th out of 39 OECD countries for medium qualifications (levels 2-3) by 2035 and 10th for higher qualifications (level 4+), down from 6th in 2022[5]. In addition, only one in ten adults in the UK currently have a level 4 or 5 qualification as their highest level of qualification, creating a 'missing middle'.[6] This leaves the UK's labour market excessively polarised, hampering social mobility. People who don't opt to go to university often struggle to progress to higher levels of qualification, and to higher-skilled, higher paid roles.

Yet government and employer investment in skills are falling, with the Government's adult skills budget being cut by an estimated £1 billion (20%) in England since 2010[7] and a 19% drop in the total training expenditure of employers in England between 2011 and 2024.[8] There are also large inequalities between businesses and within them: smaller businesses and employers in lower wage, lower productivity sectors are less likely to provide training; and graduates are three times more likely to get training at work than non-graduates.[9]

This decline in investment in training sits within a changing policy context. Over recent years there has been a movement towards increased devolution, with a number of English mayoral strategic authorities (MSAs) gaining control of local skills budgets. This will be accelerated by the English Devolution and Community Empowerment Bill[10], which – if passed into legislation - will lead to greater freedoms for local areas to use devolved powers and funding across a range of areas, including skills development. Between 2022 and 2023, employer representative bodies were required to develop Local Skills Improvement Plans (LSIPs) across all 38 English local areas to agree a set

[3] Evans, S. and Egglestone, C. (2024) The great skills divide. Learning and Work Institute
[4] Evans, S. (2022) Towards full employment. Learning and Work Institute
[5] Evans, S. and Egglestone, C. (2024) The great skills divide. Learning and Work Institute
[6] Jones, E., Aldridge, F., Plant, H. and Stevens, C. (2021) Making a market for the missing middle: Higher technical education. Learning and Work Institute
[7] Evans, S. (2022) Raising the bar: Increasing employer investment in skills. Learning and Work Institute
[8] Employer Skills Survey, Calendar year 2024. Department for Education, 2025
[9] Clayton, N. and Evans, S. (2021) Learning at work: Employer investment in skills. Learning and Work Institute
[10] English Devolution and Community Empowerment Bill, House of Commons, 2025

of actionable local priorities for skills development.[11] The government intends for MSAs to build on these by drawing up Local Growth Plans, which will aim to provide a 10-year strategic framework for growth in their region.[12] In addition, the government has recently published its Modern Industrial Strategy, which aims to boost growth in key sectors and highlights reforms to the skills system including increased flexibilities for the Growth and Skills Levy.[13] Finally, from September 2026, individuals will be able to access funding from the lifelong learning entitlement (LLE)[14] to access a range of training including higher technical skills provision.

There is limited knowledge about how UK employers make decisions about training and how employers and workers are responding to the need to upskill and retrain. L&W was commissioned by the Gatsby Charitable Foundation to carry out research to better understand employer and employee decision making about training and the development of higher technical skills, providing insights and evidence to inform longer-term thinking about how policy can support changing skills needs and drive productivity. A key purpose of the project was to highlight the experiences of employers and employees, and to understand their perspectives in the context of the wider skills system.

The project focused on occupational progression routes from technician-level roles to consider how individuals can be supported to develop higher technical skills and progress to higher level roles. It took a sector specific, place-based approach, focussing on the advanced manufacturing and construction sectors in the North East of England and the East Midlands.

It builds on L&W's previous research[15] for Gatsby, which highlighted several key challenges impacting employer engagement with higher technical skills training, and a lack of awareness among employers of the ways in which higher technical skills can contribute to business growth and increased productivity. The research found that graduate recruitment tends to be the norm for higher skilled roles and where training has been undertaken, it can lose currency and relevance due to the rapid pace of industrial and technological change.

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[11] Local skills improvement plans (LSIPs) and local skills improvement fund (LSIF). Department for Education, 2024
[12] Guidance for Mayoral Strategic Authorities on developing Local Growth Plans. Ministry of Housing, Communities & Local Government, 2025.
[13] The UK's Modern Industrial Strategy. Department for Business and Trade, 2025.
[14] Lifelong learning entitlement, Department for Education, 2025
[15] Jones, E., Aldridge, F., Plant, H. and Stevens, C. (2021) Making a market for the missing middle: Higher technical education. Learning and Work Institute

Definition of higher technical skills

A core component of the research was direct fieldwork with employers and employees. It was therefore important to provide a clear definition of what is meant by higher technical skills for clarity and consistency.

This research defines higher technical[16] skills as the advanced and specialist skills, knowledge and behaviours employees need to perform the duties of higher technical occupations as set out by the Institute for Apprenticeships and Technical Education (IFATE), recently transitioned to Skills England[17]. These include the knowledge and skills needed to solve more complex problems, to use more specialist equipment, to evaluate more complex evidence, to apply skills in very new contexts, to take greater responsibility for own decision-making, to be responsible for teams and to be responsible for important business decisions.

In education terms, these are occupations that align with level 4 and 5 qualifications[18]. However, individuals progress to these occupations through different routes. In some cases, people in these occupations will have undertaken a qualification or apprenticeship at that level, others may have undertaken a higher or lower level qualification. Some may have gained the necessary skills through work (except where a licence to practice is needed), and others may have undertaken short CPD courses to gain the skills and knowledge they need.

1.2 Research aim and objectives

The main aim of the research was to understand how people are upskilled from technician level roles. In particular, the research focused on how employers and employees make decisions about higher technical training. This can include gaining higher level skills and responsibilities within their current role, or progressing to a higher level role/occupation, depending on individual career pathways and opportunities.

The objectives of the research were to find out:

1. Employer attitude to and demand for higher technical skills.
2. How employers meet their higher technical skills needs, including their approach to recruitment and/or investment in training for their workforce, and what influences these decisions.
3. How employees make decisions about whether to take up higher technical training, including whether and how they access careers information, advice and guidance.

[16] The definition of 'technical' is not limited to STEM, and includes all 15 Technical Routes designated by IFATE.
[17] Occupational maps / Institute for Apprenticeships and Technical Education
[18] Level descriptors. Institute for Apprenticeships

4. The extent to which current training provision is meeting the technical skills needs of employers and employees.

5. How employers and employees can be incentivised to increase demand/take up of higher technical training.

6. Who pays/should pay for training, why and how.

Overall, the research enables the experiences of employers and employees to be highlighted, and indicates what skills training looks like among employers who are interested in developing staff. It also helps to identify issues and challenges that both employers and employees are experiencing when seeking to develop these skills.

1.3 Report content and structure

This report begins by setting out the research methods and provides an overview of the two main research phases. The next chapter focuses on the scoping phase of the research and the process for choosing the sectors and geographical areas that the main phase of the research focuses on. It then discusses the key findings from the qualitative research with employers, employees and key stakeholders. Findings are presented thematically, linked to the research aims as well as exploring other key themes that can be drawn from the primary research phase. The report concludes by setting out the implications of the research findings for policy and practice at national and devolved levels.

2 Methodology

The research took a mixed method approach and consisted of two research phases: a scoping phase and primary research. It took a place-based sectoral approach to enable the research to draw on a range of experiences. This allowed consideration of place-based factors that might impact the uptake of higher technical skills training, along with the role of devolution.

Scoping phase

The research began with a scoping phase that informed decisions about the sectors and geographical areas on which we would focus. It provided insight on the context of different sectors and geographical areas, with a focus on those affected by changes in technology or at the forefront of responding to the net zero transition. It also considered the availability and take-up of training, and the level of skills needs. The scoping phase included the following research activities:

- **Secondary data analysis** looking at occupation progression routes across regions and sectors. This helped to identify the level of skills demand within potential industries of focus and their geographical spread of employment.
- **Desk research** to identify industries with demand for higher technical skills, which are also impacted by changes in technology/net zero. The desk research included identification and exploration of grey literature sources such as reports from industry bodies, skills policy documents, reports from industry taskforces, sector specific press articles and working papers.
- **Short interviews** with employer and industry representative organisations, strategic or local authorities and training provider representatives in order to test the suitability of shortlisted sectors and regions.

Upon completion of the scoping phase, it was decided that the focus of the primary research would be the advanced manufacturing and construction sectors, within the North East of England and East Midlands mayoral strategic authority (MSA) areas.

Primary research

Upon completion of the scoping phase, the primary phase of the research focused on hearing directly from employers and employees about their experiences of higher technical skills training.

In-depth qualitative interviews were conducted with employers and employees working in the sectors and geographical areas of focus. To supplement employee voice gained from the in-depth interviews, two focus groups were also conducted. A total of 21 employers and 20 employees took part in the research (see Table 1 below).

For employers it was important to hear about their higher technical skills needs, the approaches taken to meet these needs, and their views on current training provision. For employees, fieldwork focused more on finding out about their experiences of taking part in training, their motivations to take part in training, and the link between higher technical skills training and career progression.

Research participants were recruited with the support of stakeholders who took part in the short interviews in the scoping phase, along with support from an external recruitment agency. For the employer interviews, participants were screened to ensure they could talk in detail about higher technical skills training in their organisations. Employees were recruited via a combination of snowball sampling (via employer interviewees), recruitment through training providers, and via an external recruitment agency who targeted employees for interview based on location, sector and job role.

Table 1: Fieldwork participants

	North East Advanced manufacturing	North East Construction	East Midlands Advanced manufacturing	East Midlands Construction
Employers	7	5	5	4
Employees*	2		5	11

*2 employee interviews also took place with employees based in London (1 advanced manufacturing, 1 construction)

Emerging findings from the research were shared at a **roundtable** attended by sector bodies, provider representative bodies and policy stakeholders. As well as discussing and testing emerging findings from the research, the roundtable considered the implications of the findings for the skills system and policy.

Limitations

The research with employers was focused on individuals who had a good depth of knowledge and could share detailed information about skills development within their organisations and decisions relating to higher technical skills training. This approach was chosen in order to generate sufficient data to meet the research objectives, explore effective practice and understand how employers address relevant issues. However, the approach does mean that the research is not necessarily representative of all employers, and that some findings may not be generalisable to employers with less of a strategic focus on workforce planning or fewer available resources for staff training (and who may therefore also have less knowledge about training that supports effective development of higher technical skills). Nevertheless, we have attempted to draw out findings and lessons applicable to wider employers where possible throughout.

Recruiting employees to participate in interviews was challenging. The reasons for this were two-fold. Firstly, snowballing sampling meant that the research team were reliant on employers sharing employee contact details. There was then a reliance on the employee being willing, and having the time, to participate in a research interview. Secondly, the research recruitment agency found it challenging to access individuals who met the project criteria (individuals who had taken part in higher technical skills training, or who had expressed an interest in doing so, and who worked in one of the chosen sectors in a relevant region). To help increase the number of employees interviewed, it was decided to broaden the focus of the recruitment agency to source employees outside of the two regions of focus. Two employee focus groups were also arranged to boost employee voice. Recruitment to these focus groups was supported by contacts sourced from the scoping phase of the research. While the aim of speaking to 20 employees was met, the balance of career stage and region represented by the employees is not uniform.

3 Findings from scoping activities

The research focused on the advanced manufacturing and construction sectors, within the North East of England and East Midlands mayoral combined authority (MSA) areas. The following sections briefly summarise the key findings from the scoping activities for each sector and region, to provide context for the wider research findings.

3.1 Construction

The desk research identified construction as a sector substantially impacted by long term economic trends. The industry's skills needs are changing in response to new technologies, and the sector is seen as playing a key role in the transition to net zero.[19] It is forecast that 250,000 extra construction workers will be required between 2023 and 2028 to meet demand, including for the Government's housing and infrastructure goals.[20]

However, many employers do not provide sufficient training to meet future skills needs, which is having an impact on the rate of modernisation of businesses in the sector[21]. Ensuring that workers have the required skills is vital in order to take advantage of future opportunities such as productivity improvements and meeting net zero retrofit targets.[22] Construction also faces challenges in recruitment, which have been compounded by an ageing workforce and a loss of migrant workers. These issues present both a challenge and an opportunity for how the sector develops its workforce. [23]

There are a substantial number of skills-shortage vacancies (SSV)[24] within the construction sector.[25] An analysis by sub-sector (see

[19] Industry Skills Plan for the UK construction sector 2021-2025. Construction Leadership Council, 2021
[20] Over 250,000 extra construction workers required by 2028 to meet demand. CITB, 2024
[21] Industry Skills Plan for the UK construction sector 2021-2025. Construction Leadership Council, 2021
[22] Focusing on the skills construction needs. CITB, 2024
[23] The skills construction needs CITB, 2022
[24] A skill-shortage vacancy is a vacancy that is hard to fill due to a lack of skills, qualifications, or experience among applicants.
[25] Employer Skills Survey, Calendar year 2024. Department for Education, 2025

Figure 1 shows the results of analysis of the Employer Skills Survey 2022, which identifies the proportion of establishments with skills-shortage vacancies across different sub-sectors.

Figure 1 in Appendix) shows that 7.0% of architectural and engineering activities firms have at least one skills-shortage vacancy, followed by specialised construction (6.5%), construction of buildings (6.2) and civil engineering (6.1%). These figures are broadly in the middle of the range for all sectors; however, the size of the construction sector (almost 3,350,000 workers in Construction occupations[26] across 380,000 businesses[27]) demonstrates the high number of SSVs overall, and the challenge in addressing them.

All regions of England are expected to see a growth in the demand for construction workers. This includes demand for technical roles such as electronics technicians, civil engineering technicians, estimators and valuers[28]. Projections[29] show a high growth in employment for the sector over the next decade (see Figure 2 in Appendix), with a projected growth between 2020 and 2035 of 94,000 jobs in construction of buildings, 128,000 in specialised construction and 30,000 in civil engineering. Similarly, there is strong projected growth[30] for higher level occupations represented in this sector by 2035, including (but not limited to): production managers and directors in construction (plus 12%); construction project managers and related professionals (plus 15%); and civil engineers (plus 14%).

During the course of the research, the government announced[31] new training to enable the construction workforce to develop the skills it needs to build 1.5 million new homes. Our research finds that there can be a lack of focus on the development of higher technical skills in the sector, especially among older workers, so this new funding stream could help to prioritise the development of higher level skills.

3.2 Advanced Manufacturing

The desk research identified advanced manufacturing as a key sector in encouraging growth and the transition to net zero.

The previous Government recognised the importance of developing the advanced manufacturing sector in the UK and invested £4.5 billion funding so that organisations in the sector can build on existing interventions to respond to the demands of the transition to net zero and increasing digitalisation. Five investment zones have been established which will focus on advanced manufacturing in South Yorkshire, Greater Manchester, East Midlands, West Midlands and the North East, all of which have secured anchor investment from businesses in the sector.[32]

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26 'Scaled and weighted occupation demand' from 'Occupations in demand' Department for Education, 2024

27 UK Business Counts, ONS 2024

28 The skills construction needs. CITB, 2022

29 Labour market and skills projections: 2020 to 2035. Department for Education, 2023

30 Unit for Future Skills - Jobs and skills dashboard. Department for Education

31 Government unleashes next generation of construction workers to build 1.5m homes, HM Treasury, 2025

32 Advanced manufacturing plan. Department for Business and Trade, 2023

Advanced Manufacturing is also one of the eight growth-driving sectors identified in Government's Industrial Strategy[33] with the Advanced Manufacturing Sector Plan[34] aiming to nearly double annual business investment in the sector. Research indicates that companies in the sector are looking to invest more heavily in training programs to develop and grow employees in the skills that are needed to meet the demands of new technologies.[35] While feedback from the sector indicates that the skills shortages are well understood, the sector skills needs assessment[36] highlights that accessing talent at Levels 4 and 5 is repeatedly highlighted as a challenge. Make UK[37] recommends that the government and industry should agree a Skills Covenant, to commit to increased investment in training and upskilling the existing and future manufacturing workforce.

Several advanced manufacturing sub-sectors have a high or middle proportion of firms with SSVs compared to other sectors.[38] In total, 15.7% of firms in manufacture of machinery and equipment (N.E.C.) have at least one SSV, followed by manufacture of chemicals and chemical products (8.7%) and manufacture of computer, electronic and optical products (6.6).

Although projections[39] generally show a small net decline in overall employment in these sectors by 2035, it is likely that there will be a continuing trend towards more advanced manufacturing processes/jobs (and decline in lower tech processes/jobs). In addition, Engineering Professionals (N.E.C.) are within the top 15 in demand occupations. There is also strong projected growth by 2035 in a number of other advanced manufacturing occupations, including (but not limited to): engineering project managers and project engineers (plus 14%); electronics engineers (plus 14%); mechanical engineers (plus 14%) and production and process engineers (plus 14%).[40]

3.3 Regions

The North East and East Midlands MSAs have among the highest number of employees in construction and advanced manufacturing (see Table 2).

Table 2: Employees by Mayoral Strategic Authority

	Advanced Manufacturing	Construction
West Midlands	48330	53000
East Midlands	40075	42000
Cambridgeshire and Peterborough	38220	19000

[33] Invest 2035: the UK's modern industrial strategy. Department for Business and Trade, 2024
[34] Advanced Manufacturing Sector Plan, Department for Business and Trade, 2025
[35] Future skills needs in manufacturing. The Manufacturing Institute, 2022
[36] Sector skills needs assessments Advanced Manufacturing, Department for Education, 2025
[37] Skills for success: The reforms essential to our economic future. Make UK, 2025
[38] Employer Skills Survey , Calendar year 2024. Department for Education, 2025
[39] Labour market and skills projections: 2020 to 2035. Department for Education, 2023
[40] Unit for Future Skills - Jobs and skills dashboard. Department for Education

North East	38200	40000
West Yorkshire	33350	51000
Greater Manchester	29500	67000
Liverpool City Region	21375	30000
West of England	15815	28000
South Yorkshire	12990	29000
York and North Yorkshire	11475	20000
Tees Valley	10955	16000

Business Register and Employment Survey, 2023

Construction

In the North East, the transition to net zero will see demands for construction workers to develop new skills to meet the demand for jobs in the region. A new electric vehicle battery production gigafactory and the Teesworks freeport are expected to be big drivers of demand for construction jobs.[41] City centre regeneration, including the development of a carbon-neutral urban quarter, will also require workers with the skills in modern methods of construction. [42]

In the East Midlands, continued electrification of the Midland Main Line railway and a new NHS rehabilitation centre are the biggest projects in the region requiring construction workers.[43] The East Midlands Freeport's (EMF) sites also continue to attract investment in zero carbon technologies, energy hubs, rail-logistics infrastructure and modern manufacturing. These investments are all expected to benefit employers in the region. [44]

Advanced manufacturing

The creation of the East Midlands Freeport is expected to drive growth in the advanced manufacturing sector, encouraging investment and creating jobs. The Freeport is seen to be pivotal to achieving net zero targets. The Ratcliffe-on-Soar Power Station site will focus on low-carbon energy and advanced manufacturing, and be redeveloped to become a zero-carbon technology and energy hub for the East Midlands.[45] The Midlands Engine[46], which represents organisations across the region, acknowledges that the advanced manufacturing sector in the region needs to keep up with developments in new technologies. Being proactive and embracing growth opportunities has direct implications for skills development amongst workers in the sector.

[41] Construction skills network labour market intelligence report. CITB, 2022
[42] Focusing on the skills construction needs - North East. CITB, 2024
[43] Focusing on the skills construction needs - East Midlands. CITB, 2024
[44] Focusing on the skills construction needs - East Midlands. CITB, 2024
[45] Jobs and investment boost for East Midlands as Freeport gets green light.
Department for Levelling Up, Housing and Communities, 2023
[46] Exploring the Power of Advanced Manufacturing in the Midlands. Midlands Engine, n.d.

Advanced manufacturing has been identified as a growth sector in the North East, with a demand for skilled roles[47], with the sector identified as one of strategic importance in the North East Strategic Economic Plan.[48] The region has existing advanced manufacturing specialisms in for example automotive manufacturing, rail, aerospace, electronics, pharmaceuticals and subsea engineering.[49] Growing use of technologies in these sectors is driving demand for a workforce with the specialist technical skills needed for roles in these industries. The International Advanced Manufacturing Park (IAMP) in the region is a hub for automotive, advanced manufacturing and technology businesses. The IAMP aims to accelerate economic growth and is designated a Nationally Significant Infrastructure Project (NSIP).[50]

47 Advanced Manufacturing evidence base. North East LEP, n.d.
48 Advanced Manufacturing Evidence Base. North East Evidence Hub, n.d.
49 Advanced Manufacturing | Locating a business in North East England. Invest North East England, n.d.
50 IAMP reaches major milestone, 2021

4 Findings from qualitative research

These findings draw on:

- Scoping interviews with employer and industry representative organisations, strategic or local authorities and training provider representatives to gather insights on the selected sectors and regions.
- In-depth interviews with employers and in-depth interviews and focus groups with employees, focused on their decisions and views around higher technical skills training and the link between progression and training.
- A roundtable with sector bodies, provider representative bodies and policy stakeholders to reflect on research findings and their implications.

4.1 Understanding of higher technical skills

Most employers interviewed have a clear understanding of what higher technical skills are. However, it is worth noting the potential impact of a sampling bias as employers who volunteered to participate in the research are likely to already have an interest in higher technical skills. In addition, all employers were provided with a standardised definition of higher technical skills at the beginning of their interview, making it difficult to ascertain their understanding of these skills prior to interview.

Where employers were less clear about higher technical skills, this particularly related to the qualification levels of these skills. It was often assumed that higher technical skills are degree-level, potentially due to the use of the word “higher” in “higher education”.

Roundtable attendees highlighted that the understanding of the language of skills tends to differ between employers and training providers, with the term "higher technical skills" not always recognised by employers. They suggested that employers are more likely to think in terms of the specific skills required for certain roles or tasks, instead of levels or types of qualifications.

The size of the employer can have an impact on their understanding of higher technical skills. From the interviews, it is clear that larger employers generally have a greater understanding as they are more likely to have dedicated staff for training and development and more experience in upskilling staff than smaller employers.

4.2 Importance of higher technical skills to employers

Employers interviewed in both construction and advanced manufacturing find higher technical skills **vital for carrying out core business operations** effectively and to high quality standards:

> 'To be honest with you, if we didn't have the higher technical skills, we wouldn't be able to operate. It's as simple as that. We need these skills because obviously the machinery that is used in engineering and manufacturing, it's very high tech.' (*Large advanced manufacturing employer, North East*)

Policy stakeholders also reported a significant demand for higher technical skills among employers in the North East and East Midlands regions, particularly in advanced manufacturing and construction sectors, and other emerging industries such as clean energy. They perceive higher technical skills as crucial for maintaining and advancing the technological capabilities of these sectors. Reflecting employers' views on the importance of higher technical skills, employees also perceive higher technical skills as essential for carrying out their current roles. Employees in various sectors provided examples of higher technical skills which are required to carry out their job role, such as fitting electrical cables, using drawings, understanding regulations, and project management and problem-solving skills. Employees explained that higher technical skills are also important to gain accreditation or chartership in some professions.

Employers noted that higher technical skills are **important for ensuring the safety of operations for workers**. Employers explained that the work carried out by staff is often highly specialised, high-risk work, and therefore tightly controlled and regulated. Non-compliance with safety standards due to a lack of skills can have serious consequences for individual staff and their employer.

Employers highlighted that higher technical skills are important for **meeting regulatory requirements.** The move towards net zero is a key regulatory change that underpins the importance of higher technical skills for employers, as their staff need the knowledge and skills to ensure compliance with incoming sustainability regulation. Employees taking part in training in the construction sector explained that they are using sustainability skills on a daily basis in the workplace. Employers in the construction industry also highlighted changes in regulation following the Grenfell Tower fire that require staff to demonstrate a particular level of competence[51], which includes higher technical skills:

[51] The Building Safety Act. Ministry of Housing, Communities and Local Government and Department for Levelling Up, Housing and Communities, 2022

> ‘I think it's driven by expectations in the industry. So, what the Government have now introduced is a thing called the golden thread. And with a golden thread in construction, it means that you have to prove your competence. Not just say that you know what you're doing, you have to prove it with qualifications or other things. That's been a big driving force in the need for additional skills.’ (*Medium construction employer, North East*)

Consequently, higher technical skills are crucial for meeting both regulatory requirements and clients’ contractual requirements around the competencies of staff working on their projects Construction sector apprentices highlighted that a key aspect of their learning is acquiring knowledge about regulatory compliance and how to ensure that their use of skills in the workplace meet high standards of safety and quality.

Higher technical skills are also important for employers to **remain competitive, achieve business growth, and make cost efficiency savings**. For example, one employer explained how they brought a particular process or operation in-house rather than outsourcing it to an external provider, which required staff to develop higher technical skills. As a result, the employer has achieved cost efficiency savings and been able to provide the service to the client in a more timely and responsive manner.

Employers explained that higher technical skills are also **essential for adapting to and using new technological developments** and helping employers to stay ahead in their industries and deliver work more efficiently. Adopting new technology requires staff with higher technical skills to be able to operate and oversee the new processes or systems that are developed as technology advances.

> ‘We're looking at taking away some of the challenges we have with welding. That's timescales, personalities, sickness, absence, these kinds of things, and see if we can offset it, certainly for larger volume orders. So, we can look at robotic welding capabilities, which is quite advanced…In the future advanced manufacturing or high tech manufacturing is going to be happening, and we need to keep up with the offerings, otherwise we will lose out.’ (*Medium advanced manufacturing employer, East Midlands*)

One example of such technological developments was the area of artificial intelligence (AI). Employers interviewed did not discuss the implications of AI for their business, but one employer felt that it is important to have staff with an understanding of how to utilise AI in their business in order to remain competitive. In this way, higher technical skills have an important role to play in the business’ strategic development.

Challenges

Employers in the North East reported **skills shortages in the local labour market** which mean that they struggle to meet their higher technical skills needs**.** In both industries there was perceived to be a shortage of people in the early stages of their career who can provide a pipeline for higher skilled roles. As a result, employers have a smaller pool of talent to fill vacancies, while skills gaps emerge as experienced and skilled workers retire.

> 'We do have people come in and go on the business because we're so specialised in what we do. The machines and the technology that we've got is really bespoke. And this area of the country in the North East doesn't necessarily specialise in what we do, but we do have more people in the South. So, it is very difficult to get people in with those skills and knowledge. When it comes to the type of machines that we've got, geography wise, we're not in the best position. So, if it was the Midlands, we probably could recruit skilled people a little bit better. But it's a rarity of this area of the country.' (*Medium advanced manufacturing employer, North East*)

An **ageing workforce** is exacerbating this issue. For example, an advanced manufacturing employer in the North East explained that they currently lack the skills pipeline to replace retiring staff and there is a small pool of skilled labour in the region to recruit from. Consequently, they may face skills shortages that affect them operationally in the near future. Similarly, policy stakeholders reported an ageing workforce with an insufficient pool of younger people with higher technical skills to replace them.

> 'Quite often, gaps appear in the succession planning and it can be a bit of a knee-jerk reaction. Not all of the companies are able to plan in advance. Now we've got this massively ageing population so that everyone in the advanced manufacturing and construction sector are panicking. It's like they're all 55. They're going to leave potentially in the next five years.' (*Policy stakeholder, North East*)

Industry stakeholders highlighted a particular **skills gap in leadership and management roles in the construction sector**. They explained that a high proportion of construction organisations are small or micro sized businesses, including self-employed individuals who are sub-contracted to work for larger construction companies. Although highly skilled in their trade, construction workers often fall into a managerial role due to the length of time they have been working in the sector or because there are few others in their business with as much experience as they have, rather than because they have the higher technical skills required for the role. This demonstrates a specific need for management and leadership skills development.

Retention of higher skilled staff was also a reported challenge for employers. Employers reported a high level of competition for skilled staff between employers in the sector in the local area, and cited cases of staff 'jumping ship' to a competitor employer for a small increase in pay. Although this applies to lower skilled staff more often than those with higher technical skills, employers explained that when highly skilled staff leave the company, the employer does not have sufficient notice to prepare for that loss of skills. Moreover, it typically takes longer to replace a highly skilled employee than lower skilled workers.

In addition, employers reported that **large infrastructure projects** such as HS2 and Hinkley Point create skills shortages in companies that are not involved in these projects. This exacerbates competition for skilled workers and difficulties in both filling positions and retaining staff.

> 'The people who can weld, who can really weld, are doing big infrastructure projects, doing 10-12 hour days and making a lot of money. Hinkley Point C is the new reactor that's coming online. It's quite well known within our industry that any good welder is down there on site, they get £80,000 a year for doing pipe welding, so it means you're really struggling to get any other welders anywhere in the country where they might be earning between £20,000 and £30,000.' (*Medium advanced manufacturing employer, East Midlands*)

Industry stakeholders similarly reported that large infrastructure projects and high demand for new areas of work such as retrofitting to support the net zero agenda causes skills shortages. This in turn leads to wage inflation as employers compete to recruit people with the skills they need.

> 'There's a retrofit requirement for all of these homes which will be sucking talent from the existing market…we see huge demands around retrofit on skills and they'll be sucked across from other parts of the sector which will be required to backfill… [There is] huge demand for construction skills for large infrastructure projects like Hinkley Point C and HS2. We already have a skills shortage and they tend to suck in a load of talent from the wider market, which is not that good at replacing that talent, and that's why you end up with a wage inflation across the construction sector.' (*Industry stakeholder*)

To overcome this challenge, employers may offer training and increased pay when staff gain qualifications, to encourage staff to remain with their employer. Another strategy used by large employers is training two or three employees in a higher-skilled role to provide some contingency in case one employee leaves the company.

> 'I think the biggest one is if you train somebody to a certain level and they become a specialist and if they want to leave for more money and you haven't got any backup, you're losing a really valuable asset that you have no control over. What we'd probably do is, although you have one specialist, you'll have two or three people that are potentially there in the background to step up.' (*Large construction employer, North East*)

4.3 Meeting higher technical skills needs

Most employers interviewed **focus on upskilling internal staff** to meet higher technical skills needs, **rather than recruiting new staff.** Upskilling current staff is usually the preferred option as employers generally want to invest in their people and incentivise staff to stay with the company by supporting their progression. In addition, successful recruitment relies on being able to source higher technical skills from the local labour market, which, as discussed, is not always possible. However, in cases where an employer requires a higher technical skill relatively quickly and feels they cannot wait to upskill an existing member of staff, recruitment is used as a way of sourcing these skills more immediately. In addition, not all smaller employers are able to upskill their staff due to capacity and resource constraints.

The employers interviewed use a variety of training methods to train their employees in higher technical skills, including in-house training and mentoring, external short courses, apprenticeships and NVQs. Employers' decisions about whether to use internal or external training depends on a number of factors.

Most commonly, the employers we spoke to use **a mix of internal and external training to serve different training needs.** For example, internal training can be used to provide more informal learning on the job and is more flexible as it does not require employees to leave their workplace. However, internal training rarely leads to an accredited qualification, limiting its usefulness in meeting regulatory requirements, for instance. While external training is more likely to provide formal accreditation, this tends to require employers to release staff during work hours, negatively impacting organisational productivity. To limit this disruption, some employers deliver internal training until accredited training is necessary, then offer employees the opportunity to undertake external vocational training.

> 'We'll train them to a certain level then we would put on an NVQ with a local provider and then it will be working on the job type of training, getting new skills and being assessed.' (*Medium advanced manufacturing employer, North East*)

Internal training is most likely to be used by employers that operate in niche sectors, such as railway track manufacturing, or that have an internationally owned manufacturing brand. These employers often need to develop their own training programs to address specific, bespoke higher technical skills requirements which are not covered by external providers in the UK because the skills are considered too niche. In some cases, relevant training does exist but not in the local region, meaning they must find providers in other parts of the country or abroad. This was the case for a Japanese brand with a manufacturing base in the UK:

> 'The Japanese [staff] will come over maybe for two or three months for every launch of a new model to put all the new technology out and our staff work with them. We do send our staff over to Japan as well. But that sort of training isn't available in the UK because it's pretty hard for the colleges because they teach very generic, not bespoke courses.' (*Large advanced manufacturing employer, North East*)

Internal training is also most likely to be used by large employers with sufficient resources and capacity to provide formal internal training to their staff, such as through an internal training academy or team of learning development specialists:

> 'We have a big training and learning team, and we have lots of courses that are specifically for certain skills. From a managerial side as soon as you sort of enter the business, we do have a high performing person scheme which kind of singles out people who we think are going to be on the escalator into higher manager roles, and they have mandated courses that they must go on to sort of further that, and that's a [company] created and led course.' (*Large advanced manufacturing employer, North East*)

Policy stakeholders explained that large employers are more likely than small employers to have sufficient resource to provide in-house training programmes supported by mentoring and work shadowing.

External training is most likely to be used by employers seeking training in specialist skills that they do not have in-house. Some of the employers interviewed contract out training to external providers that come to their site. Training staff together reduces the administrative burden of organising individual attendance at external training and allows employees to practice skills in their own work environment. In some cases, a small number of staff receive external training with the aim of them passing their learning on to a larger cohort of internal staff more informally through on the job training. This minimises the amount of time that staff are out of work to complete training, as well as the money spent on external training. Some employers pointed out that certain types of higher technical skills training are regulated and these can only be provided by external, accredited training providers:

> 'There's certain things we can't do. I'd say everything in the NDT [Non-Destructive Testing] side of things is all external and that is regulated that way anyway. You have to have an external qualification. But that is done by another company on site.' (*Employee, small advanced manufacturing company, East Midlands*)

Training in how to use new materials or products is often provided free of charge by the product supplier or manufacturer as part of the service they offer the employer. Employers explained that suppliers or manufacturers are best placed to provide this training because they understand the product.

How higher technical skills are acquired

The employers interviewed use a variety of training methods to develop their employees' higher technical skills. **Most use more than one kind of training**, emphasising that using diverse approaches helps them to address different training needs effectively. Most of the larger employers generally use a wider range of training approaches, while smaller employers tend to limit training to apprenticeships and informal methods, such as on-the-job shadowing, to develop their workforce.

Most employers interviewed, regardless of size, are using **apprenticeships** to provide a steady stream of employees trained to the company's specific skills needs. Employers highlighted that the range of apprenticeship levels allows for extensive career progression, and that retention is encouraged as many apprentices remain at the company long term. The number and range of apprenticeships is highly dependent on the size of the employer as larger employers are better equipped to offer a wide variety of opportunities. Some employers did highlight however that, while apprenticeships can be used to train for long-term future skills needs, they are not as useful for filling more immediate skills needs.

> 'If we need someone to do the job straight away, it is better to employ someone who's got the experience. But if we want to train someone in the direction that we need, we see that in a few years we will need some people in this field. That's when we take apprentices, and we train them towards that particular role.' (*Large advanced manufacturing employer, East Midlands*)

Some employers also use **skills bootcamps**, although opinions on their effectiveness vary. Not all employers use bootcamps frequently, some are not familiar with them, and some expressed that the effectiveness of bootcamps can vary depending on the specific skills and needs of the company. While employers of a range of sizes use bootcamps, out of those interviewed, larger employers are the most likely to use them. Where bootcamps are used, they are mainly for team building and specific skills and tend to be seen as a quick-fire opportunity for intensive, short-term training, as opposed to longer-term apprenticeships. Employers using bootcamps also highlighted their success in employing people who might not have been hired through more traditional routes. One employer explained that bootcamps give them more confidence to employ people who are further away from the labour market as they tend to have a strong retention rate:

> 'The bootcamps that we've delivered have been really successful. We've been able to employ people that we probably wouldn't have employed if we had just held an interview with them because they're just not quite employment ready or because we just need some confidence that they're going to stick out and be here for the long haul… a large proportion of the people we've employed that have come through the bootcamps, we probably wouldn't have employed them had we held just the first interview because we just wouldn't have had that initial confidence.' (*Large construction employer, North East*)

4.4 Decision making on skills development

Employers use a mix of strategies to identify skills gaps and training needs, including regular reviews, skills audits, and skills matrices**. Large companies are likely to have more systematic processes for assessing skills and skills development needs**. They typically have a training and development management role or team, responsible for conducting regular strategic reviews of skills requirements and plans training accordingly. This enables these employers to plan far in advance of when they expect to need particular skills, reducing the risk of facing skills shortages that could impact operations. Large employers are also likely to use a **skills matrix** which specifies the skills required to carry out a particular role. Gaps are identified where a member of staff does not have skills that are required for their role according to the skills matrix. Skills matrices are felt to be useful in standardising training and development processes for employees across the organisation.

> 'They identify [skills gaps] early, so we train where we need it to be. Our succession plans are four or five years ahead. We look to see what we need to succeed… Every department has a skills matrix for what we deem to be the skills they require to do the job. Everybody is graded on what level of work they do. Any sort of gaps in the skills they're working on, then a training program is put in place…Every manager is tasked with that yearly…and every January, they have to put a budget in for what training they need.' (*Large advanced manufacturing employer, North East*)

In contrast, **small companies tend to be more reactive in their approach to assessing skills needs and making decisions** around how to develop skills. They are more likely to plan training for staff in response to an emerging skills need especially to meet the demands of a new piece of work, and to keep pace with new technological developments. Skills assessments and planning are often carried out by senior management at a strategic level. Line managers tend to be responsible for identifying and sharing the skills gaps and training needs of staff members they manage.

> 'So, it's emergent all the time. We try and meet once every six months to say, okay, what are we doing about skills? What do we think we're going to need?' (*Small advanced manufacturing employer, East Midlands*)

Industry stakeholders also emphasised that decision making around skills development can be a challenge for small employers for several reasons. Firstly, small employers are less likely to have dedicated learning and development staff, and so lack in-house expertise about the skills system. Consequently, they may be less able to articulate what their skills needs are and commit time and resources to finding suitable external training opportunities. Secondly, small employers are likely to face tighter financial constraints, limiting investment in employee development. A representative of small businesses explained that when budgets are stretched, employee upskilling is likely to be one of the first expenditures to be cut.

To help employers in the construction sector to access the right skills solutions to meet their needs, the Construction Industry Training Board (CITB) provides regional Skills Advisors across the areas it supports. Skills Advisors provide one-to-one calls and tailored advice to employers, and give guidance on available training and how to access it, advice on skills development aligned to business goals and information on funding and grants to help cover training costs. If they don't hear directly from employers, they aim to proactively reach out to every eligible business at least once a year for a consultative session to discuss the business's goals, opportunities, risks and training needs.

> 'It's the CITB advisor's job to understand what questions to ask—to probe and get a feel for the best solution that supports a business's ambitions while also addressing risks that can be tackled through training. They're trained to connect the dots, helping businesses move forward through effective skills solutions.' (*CITB Customer Engagement Manager)*

Staff performance reviews are also used by employers and employees as opportunities to identify skills gaps and training needs of individuals. Some employers also carry out **observations** of their staff to assess their skills and competency in their role, which are used to identify training needs for individual staff. This approach is used especially in roles which require manual higher technical skills. For example, a construction employer explained that senior staff often observe employees performing installations and identify where there were gaps in their skills or knowledge, which require additional training. Another construction employer explained that they conduct thorough on-the-job skills assessments while inducting new staff into the organization.

Quality audits are another way in which employers identify skills gaps and training needs. Where audits reveal areas of non-conformity or poor-quality standards, quality improvement teams identify action to tackle the root cause, which often involves staff training to improve performance.

Employers interviewed highlighted that **decision-making on skills development is largely employer-led**, with employers assessing whether or not they have a particular skills development need. However, as previously noted, the participating employers were very invested in skills development and were recruited on this basis – and so their experiences may not accurately reflect those of employers more broadly. Most employers of all sizes reported that they also consider requests from individual staff for training. This is done by individual staff identifying training they want to engage with to improve their skills and requesting that their employer funds, either partially or fully, their training. Employers vary in their responsiveness to employee requests for training. Generally, they aim to support employees to upskill in ways that matched their career aspirations so long as these aligned with the business' skills needs.

> 'Each member of staff has a career development plan which lays out where they want to be in 30 days, 60 days and 90 days, and what courses or things do I need to improve on to get there… and again it's what can we do to support you as a business, and part of that is what course do you want to go on, but a lot of it is just up to the person. We open up and say we're quite transparent so what skills do you want to learn? How can we support you?' (*Large, advanced manufacturing employer, North East*)

Influences on decision-making

The interviews also discussed factors that influence employers' decision-making around skills development. Some employers explained that they often stick to familiar skills training approaches, with **decision-making based on what has worked well for them historically**. Staff are encouraged to pursue qualifications that are the same as those attained by staff in similar roles in previous years.

> 'We're quite traditional in the sense that, you know, the [quantity surveyors] tend to have all the same qualifications, the project managers, bar those that have been here for 40 years, tend to all have or are progressing towards the same qualifications. It tends to be because we've had good outcomes and outputs from what we've done before, we'll replicate it and do it again and we'll continue with that cycle.' (*Large construction employer, North East*)

Employers also explained that **decisions around training may be closely linked to innovation in their sector**. In developing a training strategy, many employers conduct business forecasting and research into issues such as technological advancements or regulatory changes that may have an impact on their sector. They also utilise relationships with local stakeholders to identify emerging skills needs. For example, one large manufacturing business explained that a senior staff member is involved, as part of the development of a local skills improvement plan (LSIP), in advisory groups with other industry employers, a local university and the regional chamber of commerce. These groups allow for knowledge sharing offering insights into training that the business should invest in.

> 'Through speaking to other companies [and] universities, you get to know A, what other companies are doing, B, what new research the university's doing as well, and sometimes they'll come to us to help look at it, so for the welding for example, they've come and attached cameras and monitoring equipment and I can't remember what kind of sensors and bits like this they attached to our welding guns and got some data from that really, which they've fed back into their research, so it's this, a lot of collaboration informs us about decisions as opposed to sitting down and just thinking oh what should we do.' (*Large advanced manufacturing employer, East Midlands*)

One large employer identifies higher technical skills needs through collaboration with local stakeholders in their sector, including training providers and local university research teams. This provides them with insight into areas of innovation that they can invest in by ensuring their staff have the higher technical skills required to harness the latest innovations.

Employee perspective on skills development decision making

On the whole, **employees reported feeling involved in decision making about the type of training they engage in**. They work with their employer to identify gaps in their skill set and discuss how their skills gaps map on to skills needs of their employer. Employees also canvass the opinion of colleagues and line managers on the quality and suitability of specific training courses when considering the training to engage with.

> 'It's almost like trying to identify where the gaps in my own personal skill set are, and also maybe the gaps within the company. And I'm just saying, "okay, how can I be more useful? How can I be more beneficial for the company?" When it's come to the more recent ones, it's areas of interest. It's discussing with line managers. It's discussing it with people who are more experienced, just, okay, what's the opinion of this course?' (*Medium advanced manufacturing employee, North East*)

> 'They've said…anyone that wants to take advantage of training and such, then you know, please put yourself forward and we'll make sure that you're sort of internally or externally trained in the relevant stuff that you want.' (*Medium construction employee, London*)

In some cases, employees may need to prompt their employer to provide information about available training and opportunities. For example, one employee interviewed explained that doing this had resulted in a positive outcome, with their employer providing the information they required to help them access training.

Some employees explained that their involvement in decision making can vary according to the type of training. While some training is mandatory, some employers may offer choice around other training that employees pursue. Where this is the case, employees tend to undertake training based on their interest in developing specific skills or that is relevant to a particular role.

> 'At the beginning of the year, they say, "is there any training you want to do this year?" They put it out there and see which one is requested the most and look at getting guys on it. Then if we get like a new piece of equipment in, they'll think about who's probably best to go on the training for that equipment.' (*Construction employee, North East*)

4.5 Information and guidance about higher technical skills training

To source training for staff, **employers typically rely on existing connections with training providers with whom they do repeat business, or search online to find new training provision**. This does limit the options for seeking information about training routes for smaller employers. Larger employers tend to have dedicated staff who are a useful resource in terms of the time and experience they offer in sourcing training opportunities. Those with specific staff or teams focused on training and development tend to be more aware of the range of the provision available to them and generally pursue a wider range of training opportunities. In some cases, however, employees may be responsible for identifying training with which they want to engage. Employers also obtain information about skills provision through training providers who approach them to market their courses.

> 'We have training advisors who feed us with more information on how to go about whatever training it might be. These people are basically employees of the company who just search for more information about the training, and then present their findings to the company, which will help us make our decisions based on their information.' (*Small construction employer, East Midlands)*

Large employers tend to have extensive networks and connections through which they find out about new skills training opportunities for their staff. These networks include local chambers of commerce, trade associations, professional bodies, strategic and local authorities, and industry-specific networks. Some larger employers are also drawing on connections with local Institutes of Technology (IoTs), but not all larger employers interviewed described having contacts at IoTs. Connections with strategic and local authorities were felt to be particularly useful in finding out about local training opportunities. Employers explained that local and strategic authorities had good insight into the extent of local training provision, through the connections they had with providers.

> ‘It's probably more ad hoc so we're quite engaged with local groups so the strategic authorities and the likes where we can understand what training provision there is.’ (Large *construction employer, North East*)

> ‘To be honest with you, the connections I've got now are quite in a position where they virtually send them to me…I can approach any of the contacts I've got and ask a question. If they don't know who, if they can help us, the point is in the right direction. I've built that network over a period of years where it's quite easy for me…So if anything, new comes up, I'm quite on the ball quickly to get it.’ (Large *advanced manufacturing employer, North East*)

Larger employers, with established training and skills managers or departments, were generally satisfied with the information on skills training that they have access through the various channels and networks they use. However, there was recognition from larger employers that **SMEs without established connections may experience difficulty accessing information and guidance**.

> ‘If you're not in them sort of circles, if you're just somebody in SME or the – who requires one of our skills, it must be quite hard for them. I don't know what – how that would work.’ (Large *construction employer, North East*)

Evidencing this lack of awareness, one SME explained that they had only recently discovered what T Levels were.

> ‘I didn't realise T levels were a thing until last year…So I didn't realise they were a thing And I think that was a great. Once I realised what that was, I think that's a great route.’ (*Medium advanced manufacturing employer, North East)*

There were several examples of employers struggling to find training courses that meet their needs. For example, one employer said that they struggle to find information about basic engineering courses available locally. They explained that providers used to hold careers days that employers could attend giving them the opportunity to learn more about courses from staff members, but now they could only communicate via email.

> 'I've really struggled to find a suitable college to deliver what I would consider to be quite a basic engineering qualification. And I think you've literally almost got to canvass it, it's almost like cold calling, which is terrible really, it should be much more accessible information.' (*Medium advanced manufacturing employer, North East*)

At the roundtable, industry stakeholders explained that **'skills terminology' can be a barrier to employers understanding the range of training opportunities available** to them. They said that businesses tend to use different terminology to training providers and policy stakeholders and tend to focus on competency for specific roles or tasks rather than considering 'skills' or qualifications. Similarly, these stakeholders feel that a lack of a cohesive skills system is having an impact on how employers understanding of different training routes that are available. Some stakeholders suggested that Skills England should play a role in developing a coherent skills ecosystem. While stakeholders identified the benefits that local skills improvement plans (LSIPs) have had on engaging employers in conversations about skills development, they believe that this is scope for Skills England to help address the fact that there is still not enough emphasis placed on how to ensure higher level skills are developed. They also feel that more needs to be done to ensure that employers and providers have a shared understanding of skills terminologies to find common ground between them. Stakeholders envisaged therefore that Skills England could facilitate employers, training providers and stakeholders such as MSAs and LAs coming together to help employers to identify and articulate their skills needs, as well as helping them to find information about training provision.

Policy stakeholders thought that there was a lack of awareness among employers of specific training options and their benefits, such as higher technical qualifications (HTQs). They felt that, due to a lack of employer engagement in the development of HTQs, there was a lack of buy in to the qualifications among employers as a result.

Employers noted that there is no single access point for information on skills training and that they would benefit from a centralised hub of resources. This could contain information on local and national skills providers and the range of courses available. They felt that current resources on GOV.UK and other websites are very fragmented and not particularly user-friendly adding confusion for employers. Employers made the point that with skills provision "you don't know what you don't know" and so there may be training that they could benefit from but were not aware of. A central hub, maintained by central or local government, would raise awareness of opportunities and reduce the reliance on industry connections for information and so redress the imbalance between large and small employers.

> 'There's not necessarily one database that tells you all the high level skills training within the north, if there is I've not been made aware of it…again whether it's that catalogue example or as I said there's a lot of programs that fall under the radar because they don't necessarily get listed or you're not aware of the ins and outs of the program to find out where it's listed.' (*Medium construction employer, North East*)

There was recognition that this could be difficult to develop, however. For example, employers in the construction sector acknowledged that because their sector is so broad, a comprehensive directory of provision may not be feasible.

> 'As far as I'm aware there's not a certain website that has every single bit of training and every supplier within the UK that you can go to. I think it is just word of mouth a lot of the time. If there was a directory of training and training providers it'd be good. But I think because construction is so broad and so wide when it comes to different trades that work within construction it's hard to list out everything that's needed or everything that is available.' (*Small construction employer, East Midlands)*

4.6 Suitability of higher technical skills training

Employers' views on the suitability and sufficiency of higher skills training were mixed. This depends on whether the training is provided internally or externally, the location of the employer, employer size, and the specificity of skills needs. There are also some practical considerations relating to cost of training, and time needed for employees to take part in training.

Types of training – external and internal

Employers are generally satisfied with internal training they provide to employees, and cited examples of staff who had progressed internally from junior to higher technical roles by gaining new skills through internal training.

However, some **employers expressed concerns about the quality and relevance of accredited external training provision and identified gaps in provision**. As highlighted in the discussion about the acquisition of higher technical skills, employers had mixed views on the ability of bootcamps to meet their specific skills needs. NVQs and apprenticeships are more commonly used by employers to meet higher technical skills needs.

Policy stakeholders discussed the suitability of external training based on the format and length of courses. Several said that the structure of levy-funded apprenticeships made them unsuitable for higher level skills provision. They explained that it was often undesirable for employers to start already productive employees on multi-year apprenticeships that may only be partially applicable to their skills needs. Instead, they believe many employers would benefit from short-form or modular-style courses of roughly three months as an alternative. However, these would need to be accredited and integrated with current provision to ensure that they did not garner a poor reputation among learners. Supporting this view, industry stakeholders reported an increase in employers taking up short duration training courses for their staff. Short courses were seen to appeal to employers because they provide targeted training that focuses on specific skills that staff needed to acquire without requiring them to spend extensive time off the job which could have a negative impact on productivity.

Employers of a range of sizes **reported challenges finding external training that was specific to their training needs**. Rather than training staff in the specific skills the employer needs in their workforce, employers reported that accredited provision, such as apprenticeships, tends to focus on more generic skills required in the industry. They recognised that this stems from the need for provision to be cost effective, with providers needing to design content that is applicable to a range of learners. Each learner comes from a different employer and may have slightly different job roles with varying specific skills needs that cannot all be catered for. Employers said that on-the-job training or additional courses, for example how to use role-specific equipment, were often required to fill knowledge gaps.

> 'So, it becomes very difficult for a college to put a course on, 'I'm going to teach you how to do this with robotics. It will be a generic course where they may get something out of it, but it will not be a very skill specific to the area of what that particular company wants…at the moment the colleges are just very generic what they're doing. It's not really much use to the company.' (*Large advanced manufacturing employer, North East*)

> 'What we'll often find is if we sent somebody away for some advanced manufacturing training, they'll be taught specifically for something that suits their training provider, so that might be some product they've got, I don't know, machine this item, which is not an item which we use, or this part of the process which we don't have. So, they're learning stuff which is not 100% relevant to us.' (*Small advanced manufacturing employer, East Midlands*)

Echoing this view, policy stakeholders reported that by reducing the flexibility to customise training provision in recent years, external training provision has become less attractive to employers.

> 'If you're doing something a bit niche [an external training provider] has taken away all the optionality. We used to have employers who would go "right for the first year they're all going to do the same, then the second year this lot are going to do those, this lot are going to do those, and this lot are going to do those". So that they could tailor it to job roles. Now, it's one size fits all, you can do this qualification or you can do nothing.' (*Policy stakeholder, East Midlands*)

Employees generally value the opportunity to gain higher technical skills through external training and plan to do so in the future. However, they identified some gaps in the training that they had previously enrolled on. Echoing the views expressed by employers, **employees often find that longer programmes, such as apprenticeships, lack focus on the specific skills they need for their role**. They also highlighted challenges engaging with training delivered online. This was in terms of having a preference to attend in-person training which they felt would be more beneficial in terms of how they interacted with the course tutor.

Most employers agreed that shorter accredited courses could be more applicable to their skills needs. They enable employees to quickly train in areas where the business is experiencing skills shortages and do not require the upfront costs and commitment of longer multi-year courses. One employer also explained that there would likely be more appetite among employees to upskill if delivered in this way.

> 'A lot of people if it's your one- and two-day training courses or qualification then people are more than happy to do it, I think. When you ask somebody to take on a five-year part-time course as well as work and it can be a big ask for people and I appreciate that but any of these one-day courses to either renew something they had a few years back or just the little things…I think everyone will appreciate being able to do stuff like that and especially when it becomes free of charge and funded for by the business.' (*Medium advanced manufacturing employer, East Midlands*)

Relationships with external providers

Some employers noted that **colleges have become more flexible and responsive to their requests for specific training** in recent years. This is contrary to the views of policy stakeholders who commented that flexibility in external training provision has reduced. Views of the employers who took part in this research are specific to their experience, and may not be generalisable. Employers have found that colleges are becoming more open to listening to what they need in terms of skills training and try to design course content around those needs where possible. They also reported that colleges are trying to make courses more accessible to their employees by providing training at flexible times to better suit staff who do not work regular office hours.

> ‘A few years back, it was a case of colleges used to come and say what they could deliver. Now they don't, they've learned to come and say, “what do you want?”, and they'll actually try to work around it so they can help you as well.’ (*Large advanced manufacturing employer, North East*)

Some large employers have developed close relationships with local higher education providers which enable them to collaborate with providers to design curricula. This helps to ensure that learners gain the skills that employers need in their workforce.

Location of training provision

Some employers faced **challenges in finding accredited training courses locally that could meet their needs**. Employers in the North East reflected that there was a shortage of suitable training in their region. One employer in the North East explained that they face long waits before places on training courses become available for staff. This training bottleneck contributes to skills shortages within the business, which affects their operations.

> ‘The only downside to it is the waiting time. I don't think we have enough providers, if I'm bluntly honest. Quite often I'll go for a course and I'm told they can deliver that, but it could be four to six months away. And I've got a manager saying we can't put this person on the job without it.’ (*Small advanced manufacturing employer, North East*)

This was not raised as an issue in the East Midlands, but policy stakeholders in the North East felt that it is a particular issue in the region. They explained that employers in the region often have to look further afield to meet their training needs, which was supported by findings from the employer interviews. For example, an advanced manufacturing company felt the quality of training locally had fallen in recent years, which meant that they have had to look outside of their local area to find more suitable training opportunities. They feel that this has not been totally satisfactory as learning has been online, and they have a preference for in-person sessions.

> ‘I think we have struggled a little bit finding training providers in the North East for apprenticeships. We look at things like Ofsted ratings, reviews, pass rates. We have criteria that we look at to say, is this provider at a standard of what we want for an apprenticeship? I do feel the standards of what we've had from local providers has slipped… I don't think we're quite getting the level of what we want. So, for some of them we have gone wider to companies down the country, and they're often a bit more of a remote learner, which I don't think is ideal.’ (*Large advanced manufacturing employer, North East*)

Civil engineering employees in the North East also felt that the location of their HNC course makes attendance a challenge. Some learners commute over an hour and a half each way to college, which makes balancing work, studying and their personal lives particularly challenge. Their college's wide catchment area may indicate a short supply of training in the region. It was suggested that this challenge could be overcome by offering more at-home online learning opportunities, when covering the theoretical sections of the syllabus.

Size of employer

While looking to other regions to meet training needs wasn't a problem for larger employers, it was more of a challenge for smaller employers who didn't have the capacity or resources to send employees away for training. There was a sense that smaller employers have less scope to 'shop around' for effective training and are more locked in to established relationships with providers. Online training is another option used by employers to overcome this challenge. However, this was generally perceived to be less useful than training delivered in person, given the hands-on nature of many advanced manufacturing and construction roles. There was also felt to be less opportunity for collaboration between learners.

Some small employers who often have a narrow range of skills needs that remain consistent over time are satisfied with the availability, quality and access to external training courses. They are able to send employees to specific sessions, either delivered internally or offsite, to quickly acquire technical skills to apply in the workplace.

> 'The specific trainings that I deal with or I send my employees to, they are very well-defined trainings…it's very predefined electrical engineering training. I would say it's pretty good and we have training companies within a few miles from our area that are pretty good.' (Small advanced manufacturing employer, North East*)*

Specificity of employer skills needs

Employers who operate in relatively niche fields also reported that the availability of providers that offer relevant training is limited. These types of employers, including a manufacturer of railway parts and a lift maintenance company, tend to provide internal training to overcome this barrier where possible but also used providers in other parts of the country.

> 'For our needs, I would say there's only maybe a couple [of providers] that we could use. We would like to see more. There's a lot of trainings that are not relevant for us. So, we have to provide the training internally. Because it's not provided [externally], you can't find it.' (*Large advanced manufacturing employer, East Midlands*)

Employers also reported challenges sourcing training in relatively new higher technical skills which are not yet widespread. They also felt that training offered by providers tends to lag behind innovation and technological change. To overcome this issue, they suggested that there was a need for more future planning from providers that involves employers when designing course curricula.

> 'What could be better? I think the recognition of the needs for the future, because I think that this is limited by the instructors as well, because we only can get the instructors from the current jobs. There is not enough innovation, there's not enough looking into the future, what we can teach that is going to be needed in five years, let's say. So, there's a lack of innovation, I would say, and prediction for the future.' (*Large advanced manufacturing employer, East Midlands*)

Practical challenges

Cost was a barrier to accessing training, which some employers (including both small and large companies) reported to be prohibitively high. To tackle the cost barrier, some employers had adopted a 'training the trainer' strategy, whereby just one staff member or a small team receives external training, who then passes their learning on to other staff internally, rather than the employer paying for all staff to receive the training directly from the provider.

Another challenge for employers of different sizes is affording **staff time** out of their role to attend training. Employers try to mitigate the impact of training on productivity by limiting the number of staff who engage with training each year, or the duration of training courses that staff engage in. However, training was ultimately deprioritised when business needs could not support it.

This frustration was also raised by several employees, including one who is currently working with an SME towards an apprenticeship in electrical engineering. He explained that his on-the-job learning and shadowing opportunities have been limited by the pressure on the business to complete jobs quickly to ensure profitability. He is often restricted to supporting with manual tasks and colleagues often do not have time to discuss their work with him in detail, which he felt is stunting his apprenticeship learning. He felt that in some sense he was viewed by his employer as a cheap source of labour rather than a trainee with specific learning needs.

> 'Sometimes [I'd like more] one-to-one time, like being on a job with another qualified electrician, just sitting there and say you're trying to connect something up, this is the reason why we do it. Just a bit more into detail explaining instead of having to rush things because we need to get the job done.' (*Employee, small construction company, London*)

Some apprentices who generally felt well supported in developing higher level skills did however express concerns about their ability to balance the training with their responsibilities at work. They explained that their employers don't tend to allow much flexibility during working hours to complete training.

Some employees also faced **challenges in terms of the commitment required to complete their training**, which had been greater than expected and had contributed to some individuals dropping out of the course. Employees explained that it was likely that they would fail the course without putting in extra work during weekends and evenings and making certain sacrifices in their personal and working lives. For example, these employees had experienced increased workloads as they felt that they were expected to complete five days' worth of work in four days by their employer since starting the course. It was felt that employers should be more diligent in communicating the likely pressure on their workload before starting the HNC.

A small number of employees found that shorter courses spanning several weeks did not allow them enough time to develop higher level skills to a sufficient level to apply in work. Evidently, there's a balance to be found by providers and employers in offering training that is delivered efficiently, but to an adequate depth.

There were also varying experiences of the support offered to employees enrolled on longer, accredited provision. For example, one apprentice explained that they had not met with their tutor on a one-to-one basis for several months, despite this being an advertised element of the course. This point aligns with findings from previous L&W research[52], which found that lack of provider support was a major factor in apprentices withdrawing from courses.

Employee reflections on the suitability of training

Apprentices involved in the research shared reflections on the suitability of their training for developing higher technical skills. They explained that the relevance of the course content depends on their specific role. Given the general nature of the syllabus, some sections of apprenticeship learning material may be directly applicable to their current role and others less so. They do, however, acknowledge that there is value in understanding the skills relevant to other roles in the sector to help them to contextualise their own skills development. Many also felt that through the apprenticeship they have become more comfortable using advanced technologies. They explained that this is important to how they are perceived by more experienced colleagues in the workplace, with some feeling that their contributions are well valued.

Employees who were taking part in a HNC in civil engineering were generally positive about their course and explained that they applied their learning at work on a daily basis. Through the course they have developed skills using CAD software and

[52] Enabling Better Outcomes: A Wider View of Apprenticeship Success, The St Martin's Group, 2024

additional 'desk based' skills that have allowed them to work in a more managerial capacity. The HNC has got them "back into the swing of academic learning" having worked in manual roles previously.

4.7 Relationship between higher technical skills development and career progression

Employers reported that employees are motivated to engage with training to gain higher level skills. The key restricting factor is the time employees are required to spend training and whether they feel this is worth the time it takes them away from work and family commitments. For this reason, employees are often more motivated to engage with short courses, which require a less sustained commitment and fewer days out of work. Employees were also more willing to enrol in training that was funded by their employer and took place during the working day.

This is not available to workers without a stable employer, who are on part time or zero hours contracts. For example, a construction worker who moved between short-term agency jobs explained that all training he had previously enrolled on had been self-funded and carried out in his own time, therefore disincentivising upskilling. In this sense, upskilling and therefore career progression is more challenging for those in unstable employment.

Across the research, **training and career progression were closely linked**. Many of the employers we interviewed explained that employees who complete courses were considered for promotions and higher pay, given the skills they had acquired through training and as evidence of their commitment to the profession. Employers generally also prioritise promoting internal candidates who have taken part in training over recruiting external candidates, due to knowledge and expertise that the individuals have of their business. This was especially important to employers who need a specialised higher technical skill set. Training completion was also often viewed as evidence of an employees' readiness for higher level roles. Some employers ensure clear pathways for internal progression, frequently through use of apprenticeships as a starting point with further upskilling to support an individual to develop higher technical skills. It is apparent that this is especially important in the construction sector in order to retain talent.

Employees interviewed also made a clear link between higher technical skills training and career progression. There was recognition that upskilling is important for professional success, and employees expressed a strong appetite to acquire higher technical skills. Many also acknowledged that being more skilled is often linked to higher pay, and this is a key motivating factor for taking part in training for some. Many employees had previously engaged in training that had supported their progression and had ambitions to engage in further skills training to move in to more senior positions in the future.

> '[Training] helps provide that sense of importance and significance of like, you are upskilling yourself, and this will be very useful in a working environment…Having that opportunity to develop to almost guide my own career. There's certain skill sets where I don't feel confident enough at the moment in this, and then working for the company where they've got the opportunity to develop those skills has been phenomenal so far…you're broadening your skill set. And I think that generally, as an engineer, being able to get more knowledge, more experience can only be more helpful later down the line.' (*Employee, medium advanced manufacturing company, North East*)

It's worth noting here that many of the employers we spoke to are particularly committed to offering staff training and development. These employers may be more willing or able to offer progression opportunities to employees than the general population of advanced manufacturing and construction employers. From the interviews, many employers explain that they are able to retain staff, with progression opportunities available as staff acquired more higher level skills. Some of the employers did however explain that progression opportunities are limited due to the perception that career progression may be faster with another employer, especially in businesses where there are a lack of suitable vacancies for staff to apply for:

> 'There are never enough opportunities for staff to progress. When we are at our required head count, the only way to progress is if someone leaves - we don't want any our higher skills to leave…. A lot depends on local employment requirements, if there is not much growth in the local area people don't tend to leave as often.' (*Medium advanced manufacturing employer, North East*)

Previous L&W research[53] has also found that opportunities for internal progression can be limited, and that in some regions work in the advanced manufacturing sector tends to be low paid with limited options for career progression. Similarly, a policy stakeholder said that while employees show interest in developing higher level skills, their progression into middle level roles is stunted by a lack of available jobs. They explained that although there are ample opportunities for both training and job roles at levels 1-3 and levels 6 and above, there is a lack of training and employment opportunities at the middle levels of 4 and 5. This created an hourglass structure where there is a lack of progression pathways from level 3 to 6.

[53] Jones, E., Aldridge, F., Plant, H. and Stevens, C. (2021) Making a market for the missing middle, Learning and Work Institute

> 'We've almost got two workforces, the [level] 6 and 7s, and the up to 3s. If employers wanted professional engineers and professional builders, they were having to push people through to get a degree…so we've steadily lost the level 4 and level 5. They jobs aren't particularly there…What you see is the progression up to the chartered professional status, be that an architect, a civil engineer, structural engineer, electrical mechanical engineer, has disappeared. They don't need to be fully chartered, there's actually a really good job potentially for them, but we don't seem to be creating the jobs…it's definitely the white collar and the blue collar, which I don't think is healthy.' (*Policy stakeholder*)

While it is clear from this research that employers could see a link between the acquisition of higher technical skills and career progression, **a shortage of appropriate roles can limit levels of internal progression**.

Generally, employers noted that **younger workers show greater interest in developing higher technical skills**, perhaps recognising the longer-term benefits of upskilling in pursuing their career aspirations. Conversely, it was felt that older employees, who are nearing retirement, are less interested in upskilling for the same reason. This presents a challenge for employers who have an ageing workforce and are unable to recruit younger staff to junior roles as is can lead to lower numbers of staff with the higher technical skills needed to meet the needs of the business.

Employees expected that higher skills training could also support their career progression, both internally with existing employers and externally with new employers. They explained that they were drawn to completing accredited training in recognition that the qualifications they gained are widely recognised and that they could apply skills developed through accredited training in roles at other organisations. Some of the younger employees who took part in the fieldwork said that they expect to continue developing their higher level skills and progress within their existing organisation. For example, apprentices in the construction sector reported that there are plenty of opportunities for internal progression in their workplaces, with many colleagues having been employed there for many years.

In some professions, employees accept that career progression is directly tied to the completion of accredited training courses. In a focus group with construction sector workers, participants explained that without an HNC in civil engineering, they would be limited to manual roles. Even experienced individuals with the necessary technical skills are often not considered for managerial positions without this qualification. The HNC equips them with the skills needed to move from hands-on work into desk-based roles with leadership responsibilities.

While employees prefer shorter courses they recognise the importance of accreditation, which tends to be associated with longer courses. As discussed previously, these insights evidence that employees may benefit from accredited modular-style provision.

> 'What's good with a lot of these is they're either UK-recognised or the majority of them are world-recognised courses. So, if it be the day that I do move organisation, it's not one of those that are company-specific. These are much wider skill sets that can be more useful outside of a specific company.' (*Employee, large advanced manufacturing company, North East*)

Stakeholders suggested that employees who are more qualified are more likely to actively seek training and be rewarded by their employer with training opportunities, which then contributes to their career progression. However, they emphasised that support from strategic authorities, central government, unions and other stakeholders should be targeted towards low paid workers and other groups who miss out on the opportunities provided by employers.

Apprentices employed in the construction sector who were undertaking HNCs were clear that the higher level skills they are gaining are directly relevant to career progression. They had good knowledge about what additional skills they need to develop to progress further in their careers and agreed that their employers are supportive of further skills development. Many felt that having a degree-level qualification is not necessary for their career progression, despite many job adverts asking for this. They generally perceive that achieving accreditation from professional bodies such as the Royal Institute of Chartered Surveyors (RICS) and the Chartered Institute of Building (CIOB) as being more important.

4.8 How employees seek career advice and guidance

During interviews, we explored how employees sought career advice and guidance. Employers explained that they use a range of approaches in supporting employees to work towards their career aspirations.

Many employers actively seek requests from employees around their skills and training needs. For larger employers this tends to be a more formalised process, for example, through regular personal development meetings and annual skills reviews. In SMEs, requests are considered on a more ad-hoc basis. Additionally, employers facilitate discussions between junior members of staff and experienced colleagues, about available training opportunities that may be suitable to their career goals. In some instances, larger employers have formal mentorship programmes, focused specifically on the development of junior staff.

'Right the way through to the more specific one-to-ones where you will have reviews with individuals, understand their development, where they're at with their career, what assistance is needed, do they need upskilling, reskilling, new skills, and there's a constant process. So, I don't think there's ever, there's never a one method in terms of assessing what skills are required. It is a consistent, ongoing, flowing process.' (*Medium construction employer, East Midlands*)

'We have the PDR, which is the Progress and Personal Development Plan every year. And there's a couple more meetings over the year just to just to see how we go. So, yes, anyone can propose what he would like to do, if he would like to change their role, maybe if he needs to undertake extra training, extra skills.' (*Large advanced manufacturing employer, East Midlands)*

'There's also the employee coming up with their own suggestions and thinking, I want to develop in this area, so there's people putting themselves through night school in different areas, they might want to take on a different competence, that might be some wiring, for example, they do some complex wiring or circuitry, doing programming of PLCs, and sometimes they come to us, sometimes they just mention it in conversation, why didn't you tell us a benefit from that, we'll pay for it, we'll pay for half of it.' (*Small advanced manufacturing employer, East Midlands*)

Some employers provide resources to support employees' career development. For example, one large employer reported that they have an internal site with a list of courses colleagues participated in previously. The site includes their feedback, giving employees a sense of which courses would be worth enrolling on to meet their skills and development needs.

'It's sort of a list of training courses everybody's gone on to beforehand. And you've got everyone's feedback and what the sort of course outcomes were. So that's been a really useful tool for a lot of them.' (*Employee, large advanced manufacturing company, North East*)

Employees also share ways in which they have sought advice, guidance and information to support their development. In several cases, they are very positive about the value their employer places on personal development. For example, an apprentice explained that colleagues are willing to spend time helping her with coursework.

> '[They] definitely helped a lot during dissertation…I remember sitting down with [colleague] and my manager and our commercial director and just going like, what dissertation topics do you reckon will be good? That was really helpful. I think we had an hour together just brainstorming possible dissertation ideas because I was like, I've got no clue what to do. So that was really helpful and like they all put aside some time to help me. My line manager would like read parts of my dissertation to make sure it made sense and just to help.' (*Employee, large construction company, North East*)

The same employee explained that she was being supported through chartership. While no colleagues had the expertise to offer this service, the employer facilitated for her to be mentored by a chartered surveyor in a client organisation.

Those working for larger companies generally had better access to resources and support to aid their career development. However, the close contact with senior colleagues that working in an SME afforded was helpful for some.

> 'I think I was lucky in the sense that previous placement of employment was a small team, so it was literally the managing director and me just working together and he trained me all day, every day…there was quite a lot of emphasis on my development.' (*Employee, small advanced manufacturing company, London*)

Seeking careers advice and guidance from colleagues was important to apprentices. One explained that they had been aware of colleagues taking part in a higher technical training course so spoke to these colleagues to find out more. A key motivating factor to undertake similar training was to remain competitive with other employees and they wanted to match their skill set.

Other employees explained that they sought information about potential training and development opportunities online. Employees had little awareness of the National Careers Service, so this is not used as an avenue of career advice and guidance. Several employees described Google searching training courses that matched the skills they needed to meet their career aspirations.

By contrast, **in some professions there is a clear, tried and tested pathway with close alignment between training and career progression**. For example, employees in civil engineering explained that the right courses to pursue was common knowledge to civil engineers, passed down from colleagues through word of mouth.

> 'As a civil engineer, if you do the job long enough, you're aware of all the qualifications you need to progress.' (*Employee, Construction company, North East*)

4.9 Funding higher technical skills training

Employers were asked to share views about the responsibilities of different stakeholders in relation to funding higher technical training. For the most part, **employers suggested that training should be employer-led**. This involves identifying sectoral skills needs, which should then direct the skills strategy of the employer. Most employers also felt that they should be primarily responsible for funding higher level skills training, with some suggesting that government could contribute additional funding for some programmes.

Employers interviewed believe that **government, both central and local, should play a strategic role in consulting employers on skills needs**. They could support employers in providing advice and have responsibility for the information hub of available opportunities mentioned in section 4.6 of this report. Employers suggested that government could play a particularly important role in supporting SMEs to gain access to funding. There was some indication that government could be responsible for widening access to roles involving higher technical skills – although no suggestions on the mechanism for this.

> 'Local government definitely have a role to play in terms of supporting as an industry as a whole, supporting particularly those who are SMEs and smaller organisations, I think there's definitely a role for local government to play to understand what the skills need is across the industry, which I think they do, but then to understand what the employer needs.' (*Large construction employer, North East*)

Generally, **employees feel that their employer should be responsible for facilitating their training**. For most employees interviewed, employers funded their upskilling, including by allowing them to participate in training during working hours and paying the fees of training courses. An exception to this can be workers registered to agencies who need to fund their own training. For example, one agency worker self-funded all training courses he had completed, which he had attended in his own time. Training was entirely the responsibility of the individual, who was then able to apply for higher paid short-term jobs as he acquired additional skills.

A HNC can be completed as a standalone qualification or as part of an apprenticeship. When comparing these routes, employees generally felt that it was more difficult to complete the qualification as part of an apprenticeship. This is because of the need to demonstrate that they meet knowledge, skills and behaviour' (KSB) objectives in an apprenticeship, which is not required for a standalone qualification. Employees interviewed felt that this element of the course was less relevant to them, given they were experienced in the sector and already had established careers. However, they recognised that KSB learning may be more relevant to young people with less work experience, who may need to develop and prove their competency to their employer.

An employee with a local authority explained that he would be unable to secure funding to undertake an HND, given they cannot be funded through the apprenticeship levy. There was recognition that without completing an HND, progression could be stunted, as the qualification made employees more competitive candidates when applying for senior civil engineering roles.

4.10 Impact of devolution

Employers rarely mentioned the impact of devolution on their approaches to upskilling. However, as discussed in previous sections, those who had connections within their strategic authority explained that they were a valuable resource in hearing about training opportunities in their region.

Industry stakeholders reported benefits of devolution including greater opportunities for more effective partnership working to improve local outcomes. For example, a stakeholder in the East Midlands region had worked with local partners to fund CSCS cards for T-Level students so that they could more easily work on site and gain work experience.

The impact of devolution for employers was discussed with stakeholders during the roundtable. They were generally positive about the role strategic authorities can play in supporting employers to meet their skills needs. They recognised that strategic authorities could play an effective local coordination role by engaging with individual employers directly and directing adult skills funding towards provision that meets these needs. Strategic authorities, rather than central government, were felt to better understand regional skills needs and more equipped to work directly with local employers.

In one MSA area digital skills bootcamps were co-designed with employers so that providers had more clarity about the digital skills needs of the local labour market. Taking this collaborative approach meant that the provision was flexible and directly tailored to employer needs. The co-design involved large employers, but the MSA found that the articulated skills needs resonated with SMEs too. A key part of the design of the bootcamps was that employers involved in the co-design met the learners taking part – brokering connections to potential job opportunities.

The advantage of taking this approach is that the training design was industry led, directly supporting employer need. Those who have taken part are able to develop higher level digital skills that are transferrable across sectors.

However, other stakeholders emphasised that regional devolution and the addition of strategic authorities as another stakeholder, risked compounding the issue of an already fragmented national skills system. Regional disparity could then result in a 'postcode lottery' of provision for employees.

Implications of the research findings

This section sets out the implications of the research findings for policy and practice at national and devolved levels.

Policymakers should maintain a focus on higher technical skills

Employers consistently described higher technical skills as essential for core operations—particularly in high-tech environments and safety-critical industries. These skills support tasks such as operating advanced machinery, solving complex problems, and managing compliance with evolving regulatory frameworks (e.g. net zero targets, building safety reforms). Without them, businesses reported that they are unable to function effectively.

Policy so far has focused largely on the supply side of higher technical education, but attention might need to be refocused on demand. For example, employers were generally not considering the transition to net zero or other emerging technologies despite the recently announced Clean Power 2030 Action Plan. The Government should consider whether specific certification requirements related to net zero should be included in regulatory requirements, along the lines of the 'Golden Thread' within the construction sector.

The Lifelong Learning Entitlement may have limited impact on upskilling without additional support for individuals

The retirement of older, experienced workers represents a significant potential loss of higher technical skills from the workforce, highlighting the importance of local government and local employer bodies working with employers to ensure a sufficient pipeline of new talent, whether already trained at this level or being supported to progress from lower-level technical occupations.

If relying on upskilling the existing workforce, older employees may be less likely to participate in higher technical skills training due to a perception that it is of less benefit to them at a later stage in their career. These people are unlikely to want to take out student loans to fund their own career development, and may require additional support and guidance from employers, local government and training providers to engage with training.

Growth and Skills Levy reforms should prioritise SMEs and the self-employed

Large employers are more likely to be engaged with training and able to take advantage of the apprenticeship levy. They have human resource expertise, can undertake workforce planning and generally have good knowledge of education and training options that exist in their regions. Some large employers may also have the facilities and staff to offer training in-house, or may adopt a "train the trainer" model to manage costs and scale learning internally.

Small and Medium-sized Enterprises (SMEs) are more reliant on external training but have limited access to trusted information about training options and face difficulty finding affordable, relevant provision. They have less time and capacity for strategic planning or staff release. Many rely on employees to initiate training requests. Management buy-in is a key first step to unlock investment in workforce upskilling. Many employers also highlighted the potential benefits of short or modular courses for their workforce.

Agency and self-employed workers are more disadvantaged still, as they are unable to access funding through employers and need to self-fund provision. This is a particular issue in construction, where there is a high proportion of such workers and a need for them to keep step with regulatory changes in relation to building safety as well as new skills around retrofit.

Education and training options need much better signposting

Many employers lack a clear understanding of the qualifications system and its terminology, particularly around levels 4 and 5; smaller businesses often find the language used by training providers to be disconnected from how they think about skills. This mismatch can limit uptake of available provision, especially when employers default to familiar qualifications or long-established norms.

There was limited evidence that employers are currently factoring emerging technologies (such as AI) into their skills planning. However, stakeholders noted the importance of aligning provision with future-facing sectors and technologies—suggesting a stronger role for government and providers in horizon-scanning and curriculum innovation.

Employers in this research generally lacked awareness of the support and guidance that devolved authorities can provide for higher technical skills development around training and how to access relevant, quality assured provision. Working with Skills England, Mayoral Strategy Authorities need to ensure that all employers have easy access to a regional information hub which brings together information and links to relevant skills provision and promotes the use of 'employer-friendly' skills language.

Career progression pathways need to be much clearer to employees

There is strong evidence that higher technical training is linked to internal progression and promotion. However, structured progression pathways—particularly those built around accredited provision—remain underdeveloped in many areas. Such pathways are particularly important to young workers early in their career.

The majority of workers are employed by SMEs, where they have limited exposure to the advice of more experienced colleagues. Little was said about the National Careers Service or Jobcentre Plus, suggesting a very different approach is needed to give those in work – particularly in SMEs – access to good career guidance.

Annex

Definition of advanced manufacturing

There is no single formal definition of advanced manufacturing. Definitions can focus on advanced manufacturing processes and skills[54] or around specific advanced manufacturing sectors. While the focus of this research is jobs requiring advanced manufacturing skills, for practical purposes we restricted the focus to employers within advanced manufacturing sectors. We used a definition of advanced manufacturing developed by the UK Commission for Employment and Skills,[55] which includes sectors defined by Eurostat as high or medium-tech. These sectors are:

- Manufacture of chemicals and chemical products
- Manufacture of basic pharmaceutical products and pharmaceutical preparations
- Manufacture of computer, electronic and optical products
- Manufacture of electrical equipment
- Manufacture of machinery and equipment N.E.C.
- Manufacture of motor vehicles, trailers and semi-trailers
- Manufacture of railway locomotives and rolling stock
- Manufacture of air and spacecraft and related machinery
- Manufacture of military fighting vehicles
- Manufacture of transport equipment N.E.C.
- Manufacture of medical and dental instruments and supplies
- Research and experimental development on natural sciences and engineering

Skills shortages

[54] C.f. Hall, S., Bradsteet, J., Chrispin, L., Soderberg, C. and Clayton, N. (2023) Manufacturing Excellence. Learning and Work Institute
[55] Sector insights: skills and performance challenges in the advanced manufacturing sector. UKCES

Figure 1 shows the results of analysis of the Employer Skills Survey 2022, which identifies the proportion of establishments with skills-shortage vacancies across different sub-sectors.

Figure 1: Percentage of establishments with at least one skill-shortage vacancy by 2-digit industry, 2024

Source: Employer Skills Survey, 2024, ONS

An employee is anyone aged 16 years or over that an organisation directly pays from its payroll(s), in return for carrying out a full-time or part-time job or being on a training scheme. It excludes voluntary workers, self-employed, working owners who are not paid via PAYE.

Working Futures

Figure 2 shows results of the analysis of Working Futures projections, estimating the employment growth by sub-sector between 2020 and 2035.

Figure 2: Employment change by Industry (SIC 2007), England, 2020 to 2035- positive growth only (000's)