
September 2014

Forging Futures

Building higher level skills through
university and employer collaboration



Universities UK



UK COMMISSION FOR
EMPLOYMENT AND SKILLS

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Foreword

The UK is facing a well-documented skills challenge. By 2022, two million more jobs will require higher level skills. More than one in five of all vacancies are 'skills shortage' vacancies – where employers cannot find people with the skills and qualifications needed. Furthermore, almost half of all businesses say they have staff with skills and qualifications that are beyond those required; so there are 4.3 million workers whose skills are not being used fully at work.

Addressing both aspects of this imbalance is vital in securing future economic stability and prosperity. Higher education is well placed to play its part. Collaborations between employers and universities have a significant role to play in providing the supply of highly skilled people to meet demand from businesses both now and in the future.

Universities and employers need to be innovative, and engaged in promoting different and non-traditional routes into higher-skill roles. We need more, well articulated, vocational and technical pathways for both young people and experienced workers. These pathways will open routes to higher-paid careers for a wider group of talented people.

The UK has a strong track record of higher skills development, but we need to do more. Employers are acutely aware of the skills their businesses need for future growth: skills development must be driven by employer needs. The best outcomes are produced where employers are actively involved in the design and delivery of programmes.

Strong partnerships between higher education institutions and businesses already exist – but we cannot stand still. The *Forging Futures* report uses 12 case studies across six industrial sectors to highlight the variety and depth of collaboration between

employers and universities. It explores the motivations for and benefits of developing alternative pathways to higher level skills. Insights from the case studies identify how to successfully design, set up and maintain successful collaborations.

The innovation and commitment shown by the employers and universities featuring in this report is hugely encouraging. There is an appetite to continue and extend the collaborative work. Through showcasing the diversity, inventiveness and energy in this report we hope to encourage others.

As Vice-Chancellor at the University of Derby I am well aware of the benefits of working collaboratively with key players in significant sectors. By listening to each other we can produce the outcomes that young professionals building careers deserve.

This report is a call to action to encourage the further development of routes towards higher level skills. Skills development should be a joint enterprise between education and employers, where workplace and vocational learning is part of the cultural norm.



Professor John Coyne
Vice-Chancellor, University of Derby
and UKCES Commissioner



Executive summary

This report shows how universities and employers are building diverse and innovative collaborations across the UK to create alternative pathways and opportunities for people to develop relevant and valuable higher level skills. This is playing a critical role in strengthening the skills of the UK workforce and is crucial to support our future economic prosperity and competitiveness. Although the UK has a strong track record of higher level skills development, more needs to be done both to supply relevant higher level skills and to stimulate employer demand and utilisation of these skills. This type of collaboration is going to play an increasingly significant role if these challenges are to be addressed.

The report considers how effective collaboration is delivered and what the important stages are in this process. Specifically the report:

- Outlines **the reasons why** universities and employers collaborate to develop alternative pathways to help people develop higher level skills, highlighting the benefits that can be gained by doing so;
- **Practically considers** how successful examples of collaboration can be set up, delivered and sustained;
- **Promotes** the need for increased collaboration of this kind, as a way of developing a broader range of pathways to employment and higher level skills;
- **Showcases** 12 case studies which explore the reasons for and benefits of collaboration for employers and universities in six industrial sectors (*Advanced Manufacturing, Construction, Creative and Digital, Energy, IT and Life Sciences*). These case studies provide examples of successful collaborations across what is a diverse and dynamic landscape, where a range of approaches and models are being utilised to meet different employer and university needs.

This evidence shows that by engaging with universities, employers can directly support the development of skills that will benefit their business in the future, while universities can ensure their offers are up-to-date, relevant and directly support graduate employability. Many universities and employers are already active in this space and there is an increasing appetite and enthusiasm for collaboration. The report finds strong reasons why employers and universities are adopting this form of collaboration:

- Employers will collaborate where their higher level skills needs cannot be sufficiently met through existing sources (for example, where they require people with highly specialised technical skills). Working with universities can lead to improved competitiveness and productivity, retention of existing staff, and better ways to attract new talent.
- Universities can extend and strengthen their curriculum offer, differentiating themselves from competitors, and offer new ways to raise positive student employability outcomes.

A key message is that collaboration works best when it becomes **a part of the cultural norm** for the organisations involved, so that it becomes a core part of how both businesses and universities think about skills development. Achieving this means collaborations need to be driven by clear, demand-led and identifiable business requirements. They should be seen as strategic partnerships which can help to tackle specific problems that are not currently being addressed through mainstream education, with bespoke products, programmes and services developed as a result.

The report finds that more can be done to encourage and grow collaborative activity. Employers, universities and policymakers have a great opportunity to consider both the importance of collaboration and how it could be supported and expanded.

Introduction

Although the UK economy is returning to growth, we still face significant challenges to secure future prosperity. There is a persistent productivity gap with international competitors, which has widened since the 2008 recession¹. Raising the UK's skill levels through education and training has the potential to improve our economic performance, with gains in productivity and higher value economic activity. However, for employers to use skills effectively and translate higher skills into higher performance, better links between skills supply and employer demand are crucial². The UK has a strong track record of higher skills development, led by our world-leading university sector, but the link between the skills gained through university study and the skills needed in employment is one that can be made even stronger.

This report is a call to action for universities and employers to work together to drive the creation of new pathways to develop higher level skills, and to share responsibility for linking *higher skills development* with *higher skills use*. Through 12 case studies we explore how employers and universities are collaborating to create diverse and innovative pathways to higher level skills, the mutual benefits gained and how collaboration can be developed and maintained. In each of our examples the collaboration is working to increase numbers of people with higher level skills, and includes activity such as collaborative curriculum development, delivery in the workplace, Higher Apprenticeships, short courses and full degrees.

Why do we need partnerships between employers and universities to develop higher level skills?

The demand for higher level skills is increasing, but matching relevant supply to this demand is crucial.

By 2022 there are projected to be an additional 2 million jobs in occupations that require higher level skills, such as managers, professionals and associate professionals, with the total employment share increasing from 42 per cent to 46 per cent of all those in employment³. The proportion of people with higher level skills in the workforce is expected to continue to grow even more quickly, as are the number of jobs requiring higher level skills where they were not previously required. This means a greater focus is needed on ensuring we develop the higher level skills required in the labour market⁴. Currently across the UK, up to one in five vacancies exist because businesses cannot find people with the right skills, qualifications or experience for a particular role⁵.

Relevant higher level skills are essential for businesses to perform to their potential.

For individuals to reach their potential and employers to increase their economic performance, skills need to be used effectively in the workplace⁶. Employers in some parts of the economy are not making use of higher level skills, and employer investment in training is falling over a long period⁷. The UKCES Employer Skills Survey 2013 found that 16 per cent of the workforce, or 4.3 million workers, had skills and qualifications above those required by their current role, and 48 per cent of businesses reported skills under-utilisation⁸. Under-utilisation of skills is related not only

to inefficient management practices, but also to the relevance of skills developed through the education and training system. If there is a mismatch between the higher level skills people develop through formal education and the higher level skills employers need, this can result in under-utilisation of skills.

The more traditional model of three-year undergraduate university study meets many skills needs, but not all. Employers often value broader subject knowledge as well as work experience and specific technical or practical skills, which are often best developed in the workplace⁹. Therefore, meeting the need for higher level skills is not just about delivering **more** people with these skills; it is also making sure these are the “right” higher level skills – those that are **relevant** to the current and future job market.

Therefore, collaboration between universities and employers is a valuable tool for building relevant higher level skills.

Partnerships between employers and universities can create a broader range of pathways to higher level skills that include vocational routes or alternative pathways into employment, and progression pathways for those already in work. Building higher level skills through university and employer collaboration can ensure skills link closely with real work and jobs. This helps employers to better meet their diverse higher level skills needs and associated benefits are realised in improved business performance and productivity. Universities benefit through extending their curriculum offer, accessing latest industry thinking to develop subject areas, delivering to new groups of students, and more closely linking their delivery to employment and employability goals.

University and employer collaboration: the existing landscape

Collaborating with employers already plays an important role for many universities.

Universities are integral to the skills and innovation supply chain for employers. The most recent Higher Education-Business and Community Interaction Survey (HEFCE, 2014) shows that across a broad range of collaboration with employers, universities contributed more than £3.5 billion to the UK economy in 2012/13, an increase of 5 per cent from the previous year¹⁰. UK higher education institutions provide significant volumes of courses and continuing professional development (CPD) directly to employers, with £423 million worth of business completed in 2012/13, of which £19 million was with SMEs¹¹. Of the 161 higher education institutions surveyed in the UK, 118 offer continuous work-based learning, 149 offer short bespoke courses for business on campus, and 138 offer these courses at business premises¹². When the higher education institutions were asked the extent to which employers are actively involved in the development of content and regular reviewing of the curriculum, 130 out of 161 rated this as 4 or 5 out of 5¹³.

Existing reviews of university and employer collaboration also highlight the range of activities on offer¹⁴. These include collaborative research, collaborative degree programmes, science park developments, enterprise education, knowledge transfer, consultancy contracting and support for entrepreneurs, Higher Apprenticeships and the CPD of employees.

This report sits within a significant body of existing work on university and employer collaboration, including a number of independent reviews¹⁵. It deliberately focuses on the specific area of collaboration for skills development and does not discuss broader types of common collaborations (including technology transfer, intellectual property, or contracted research or consultancy work, for example). In this report, we refer to university and employer collaboration on skills development as simply “collaboration”. While it is also important to recognise the significant role further education plays in delivering vocational pathways into employment, the focus of this report is only on university and employer collaboration for the development of alternative pathways to higher level skills¹⁶.

Collaboration needs to be a higher priority for employers and universities.

While this report highlights the diversity and breadth of employer-university collaboration, which in some areas involves significant strategic and financial commitment, this activity remains an area with potential for further growth. Employers may not always appreciate the full range of ways they can work with universities to address skills issues, and so raising greater awareness of this activity and opportunity is vital. As part of this research, a number of employers we spoke to said that there is a general lack of understanding among young people and employers about possible alternative routes to higher level skills, outside of “traditional” three-year undergraduate study¹⁷. Recognising this context, this report seeks to highlight the importance of university and employer collaboration for higher skills development.

Methodology

The findings presented in this report are a result of qualitative research, drawing on the expertise of a wide range of employers and university staff. This includes:

- **Secondary research:** review of existing literature on university and employer collaboration.
- **Consultation:** several workshops with representatives from universities and employers to discuss their experiences of collaboration¹⁸.
- **Primary research:** consultation with over 50 university and employer representatives, which formed the basis for 12 case studies which provide examples of collaborations for the development of higher level skills. They give practical examples of collaborations that: are innovative¹⁹; showcase alternative or vocational routes into employment that meet employer needs; showcase the flexibility that universities can achieve when adapting to employer needs; and show how employer demand for skills can be supported or stimulated. The case studies are set out in the Appendix.

Structure of the report

- **Chapter 2** focuses on why universities and employers collaborate and highlights the benefits of this activity;
- **Chapter 3** explores **how successful collaboration between universities and employers can be achieved** and the conditions for successful collaboration;
- **Chapter 4** looks to the future, outlines how collaboration can be promoted further and asks **where we go from here**.

Why collaborate for higher skills development?



Lincoln has got a long and proud tradition in engineering, so there's a feeling that local employers and the City Council here were very much behind having engineering as an activity that would spur growth in the city. Siemens see a big advantage in having an Engineering School as part of a university on their doorstep for all sorts of reasons, but recruiting graduates would be one of them, in terms of technology spin out, and co-ordination and consolidation of their business needs."

*Professor Tim Gordon
Head of the School of Engineering,
University of Lincoln
(Case Study 3)*

This chapter explores the reasons why universities and employers collaborate to develop alternative pathways to higher level skills. It finds that, although there is a great deal of diversity across different examples of collaboration, there is much common ground in the drivers for these relationships, the benefits that can be gained and the impact that can be achieved. Although no two collaborations are the same, successful ones often share similar foundations.

Across the research it was clear that for any collaborative relationship to work, to be sustainable and to create impact, the most important features are the presence of a clear business need, and a plan for the collaboration to address this. In the rest of this chapter, we explore what form business needs can take, and the main reasons employers and universities have for collaborating.

Reasons for employers to collaborate with universities include:

- Improving their competitiveness and productivity;
- Ensuring relevant pathways into industry are in place;
- Attracting new talent into an industry or region;
- Retaining and training existing staff.

Reasons for universities to collaborate with employers include:

- Creating a more relevant curriculum for employers;
- Differentiating their offer from other universities;
- Increasing student employability through work-based practice;
- Raising their profile and increasing income diversity.

Why do employers collaborate with universities?

i. To improve their competitiveness and productivity

As discussed in Chapter 1, the UK's economy is changing and the proportion of jobs requiring higher level skills is expected to grow. For employers to meet their economic potential they need people with **relevant skills** to meet this changing economic need²⁰. Improving productivity and remaining competitive are the primary aims of all businesses, so all other drivers for collaborating necessarily flow from this.

Employers and universities benefit from collaborating where business needs are not met through existing education and training solutions. Higher skills can be shaped to be more relevant to specific sector or employer needs. This is particularly the case for businesses that find it challenging to recruit people with the right balance of practical skills and a detailed knowledge of the sector.

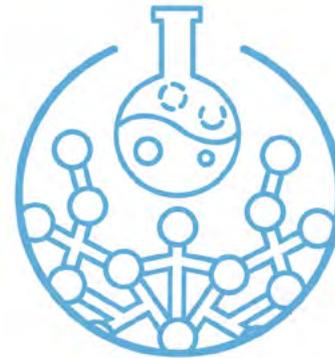
Collaborations that address specific technical skills needs can also be important for the long-term success of industries where local and sector needs match.

The wider benefits for employers often go beyond the core business or industry need that is driving the collaboration. This is particularly true when collaborations address longer-term, economy-wide needs. Importantly, collaborations often impact positively on sustained growth in the supply chain for a specific sector (which regularly includes SMEs) and enables employers to recruit locally based on local business needs.

ii. To ensure relevant pathways into industry are in place

Having clear routes into employment, which link education and training opportunities to necessary skills, can help employers to develop and maintain a skilled workforce. By collaborating with universities, employers can use industry-recognised qualifications that allow for movement through the labour market.

Building these pathways supports employers to scope, identify and deliver on future employment demands



We're based on Teesside, and there are a lot of process operators from the chemical industry employed in the region. We found that they often lacked an underpinning of the science behind the process. They can operate the equipment with the right training, but they don't have that science knowledge. Going down the graduate route proved problematic too though.

Graduates had the underpinning science knowledge, could problem-solve, but didn't have enough experience of working in a manufacturing environment [...] We started looking at Apprenticeships, and this is why the Higher Apprenticeship [in Life Sciences] attracted me. We would recruit someone who gets that underpinning knowledge as part of their Apprenticeship but we're able to then train them to run the plant, they're three or four years younger than graduates and they're adaptable to our requirements."

*Chris Mullen
Skills Development Lead,
Fujifilm Diosynth Biotechnologies
(Case Study 11)*



“

We have the ability to grow our own graduates. When graduates come out of university [...] they will have a degree that doesn't necessarily deliver exactly what we do as a business. We know what's coming up in our business, we know what's coming up in the industry because we live it and breathe it and we can build that into making sure that everything our apprentices learn at Aston [University] is directly relevant to what they're implementing in their jobs.”

*Anouska Ramsay,
Head of Talent, Capgemini
UK (Case Study 9)*

(i.e. skills requirements, job roles, project-based work) and how these demands are best addressed. This is particularly important in industries (for example the IT, and creative and digital sectors) that are highly attractive to people seeking work, but where because alternative business structures (a prevalence of micro-businesses and freelance work) or less clearly defined career pathways exist, it can be hard to know how to get a foot on the ladder.

iii. To attract new talent into an industry or region

Employers collaborate with universities to attract new talent into their industry sectors. There are strong reasons to collaborate in industries or regions expecting significant employment growth (known as *expansion demand*) or where demographic changes are likely (for example, where an industry needs to replace skilled staff because of retirement – known as *replacement demand*). Even when there is likely to be significant demand for new employees, attracting new talent into an industry can be challenging, and this is particularly the case when existing career pathways lack clarity. Attracting new talent is also important in industries that have traditionally struggled to promote themselves as attractive career options, even though pathways into them already exist.

Working with universities to encourage new talent means employers have access to a wider range of new recruits with both theoretical and practical experience, who have a greater understanding of work culture and employability, an increased motivation for learning, and an insight into possible career avenues.

iv. To retain and train existing staff

Collaborating with universities to develop clear pathways through employment also enables employers to more effectively retain and train their existing staff. Retention is improved as employees develop new skills, take on more challenging work, and recognise that their employer is willing to invest in their career development. Employers can identify and implement training that improves the skills of the existing workforce and integrate this learning into existing organisational goals, allowing better utilisation of skills. This has the potential to change the long-term training culture of employers, their approach to CPD and their recruitment strategy.

Why do universities collaborate with employers?

Many UK universities, particularly those in England, are facing a period of change, with reforms to funding, increasing competition and diversity of offers, and changing patterns of student demand and attitudes to study. In this context, many institutions are evaluating the distinctiveness of their mission and are responding in different ways. Collaboration with employers can be an important part of how universities respond to the changing higher education landscape, with potential to complement their wider missions. There are a number of good reasons universities would consider collaborating with employers, many of which complement the employer needs and motivations discussed in the previous section.

i. To extend the diversity and relevance of the curriculum

Universities collaborate with employers to build industry-endorsed, demand-led curricula, which can both attract new students and open the university to contact from new employers. Collaborations can be seen not just as add-on activities for universities, but as a core part of their offer.

By collaborating with employers, a university's core offer is extended and strengthened. Universities are able to develop more innovative, responsive and accessible curricula for employers within a shared programme of development and delivery. Creating credible, vocationally-focused provision can identify new research and consultancy links, deepen subject specialisms and help staff develop their own skills.

ii. To differentiate their offer from other universities

In an increasingly competitive education market, universities that collaborate with employers offer something distinctive in their learning experience. The endorsement of courses by relevant employers gives students confidence in the course as an alternative to the traditional three-year degree. Many potential students recognise the advantages of gaining experience of the working environment and industry-relevant skills, and employer input and support. This benefits universities by improving the levels of graduate employment, and increasing student applications and recruitment. It also encourages participation from learners who may not traditionally have participated in



All of the other major sectors would simply not be able to function without the mineral products industry. What the industry is actively doing through this [Higher Apprenticeship in Mineral Products Technology] is raising its profile. It's saying, 'Come and look at our industry, we have a fantastic career pathway, it's extremely important to the UK economy, and we want to get young, enthusiastic people in who have got fresh ideas.'

Mark Osbaldeston

Head of the Centre for Mineral Products Professional Development, University of Derby

(Case Study 4)



“

Just over two years ago, British Airways approached us because they had identified a need for developing a stream of licensed engineers coming through into their business, and we were looking at ways we could change how we delivered graduate training.

It was a good match when we came together and within twelve months we'd set up an agreement. It just so happened that it was an ideal opportunity for them to join us and to be able to develop the curriculum in a way that would fit with their own particular needs.”

Dr Rhobert Lewis

*Dean, Faculty of Computing,
Engineering and Science,
University of South Wales*

(Case Study 2)

higher education. Universities can use collaborations to complement their distinctive institutional mission and focus, thereby contributing to a more diverse higher education system.

iii. To increase student employability through work-based practice

Many universities develop collaborations with employers to promote and market *learning through practice*, with a variety of different teaching approaches, tools and techniques available. In particular, collaboration with employers can form a valuable part of increasing student employability and positive learning experiences. This takes place through building pathways to employment through work-based learning, industry input into the curriculum, and career development and recruitment activities²¹. Indeed, students on bespoke, industry-led courses could even be seen as the perfect example of employable graduates, as they have experience of the workplace.

iv. To raise their profile and increase income diversity

Fundamentally, collaborating with employers can raise a university's profile, and add industry credibility to courses and curricula. Employer collaboration can improve both the quality and variety of marketing and promotion of the wider academic offer, and, where employers are contributing financially, diversify the university's income streams.

University and employer collaboration: a win-win activity

The reasons for collaborating are varied, and there are real benefits for both employers and universities. As well as benefiting the partners there are also clear benefits for students and employees, who develop new skills alongside work experience, and for wider society and the economy, as investment in skills is closely linked to economic opportunities. Universities and employers, therefore, have a significant opportunity to build new collaborations, and extend those that already exist.

The next chapter looks at practical steps in the collaboration process, as a guide to help both universities and employers think about how to achieve this.

How can effective collaboration be developed?

Collaborations between universities and employers are diverse in nature, but successful examples share certain common features. In this chapter, informed by the experiences of the 12 case studies showcased later in the report, we outline some general principles on *how* effective collaboration can be established and maintained. We do this by working through four key stages in a given collaboration. Each case study presented in this report has created its own solution to working together to produce the most relevant higher level skills. This chapter gives a flavour of approaches that have worked in these cases.

“ When you start to look at the [business] roles within all our industries, what we’ve conventionally done is we’ve redesigned high, low and medium [skills] scenarios about what we think the roles will be [in the future].

We need to start to look at specific questions, ‘Where are the jobs?’, ‘What level are they at?’ Then the question moves from ‘What do universities need to do?’ to, ‘What role do employers need to play in creating the context and telling universities what they want, and articulating that as best as they can?’”

*Employer representative
Forging Futures Collaborative Workshop*

Figure 1: Stages of effective collaboration

Stage 1: Identifying employer needs and scoping solutions	Stage 2: Design and setup	Stage 3: Delivering outputs
<ul style="list-style-type: none"> • Scope and identify demand • Account for complexity that spans different industries and regions • Provide clarity around offer and any expected outcome • Is a collaborative approach needed? 	<ul style="list-style-type: none"> • Align strategic focus • Choose appropriate models of engagement, and models and methods of delivery • Resourcing and clear shared agenda • Consider how collaborations will be funded • Acknowledge the strengths and limitations of collaborating partners 	<ul style="list-style-type: none"> • Ensure products are fit for purpose for universities and relevant for employers • Articulate the benefit of collaboration to participants • Develop the virtuous circle of learning, application, feedback and refinement

Stage 1: Identifying employer needs and scoping solutions

What is the problem? Is collaboration a solution?

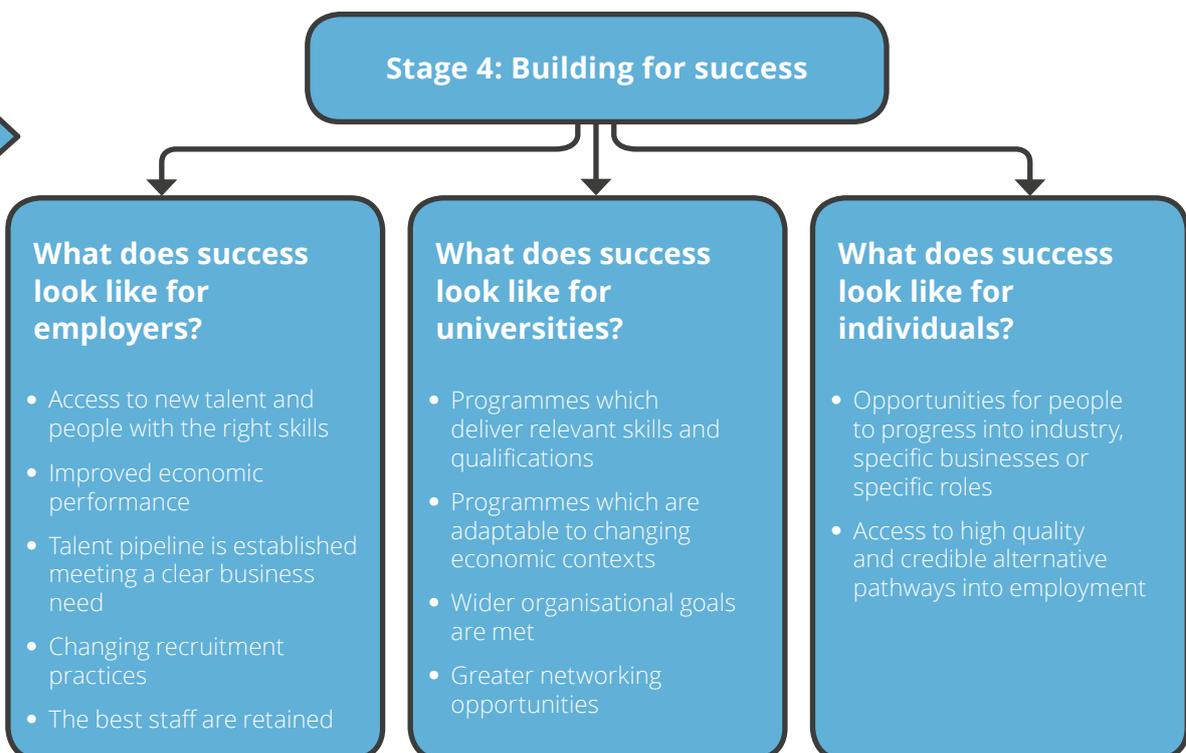
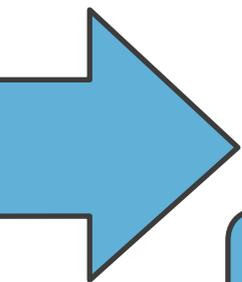
Stage 1 identifies what problem needs to be resolved, usually a specific employer skills need, and what the appropriate solution would be. Collaborations can be expensive to set up and resource intensive to maintain. Critically, entering into a collaboration need only be considered if an existing solution is not readily available. Communication with universities is important to help employers assess how their skills need might be met, either through existing provision or through some form of collaboration. Employers may need to do their own homework to identify universities that might be best suited for addressing their needs. If collaboration is appropriate, these early scoping discussions can consider what form it should take and what outcomes and success measures would be expected.

Collaborative solutions need to reflect the needs of the employer.

Collaborations most often develop when a specific industry, region or business need emerges. These needs could relate to large scale workforce or demographic issues, or to more specific, local needs of particular employers. Different sectors, regions and businesses potentially have different priorities and may require different solutions. Responding to this variety can be a challenge for universities and employers alike, and it is important for both parties to work together to clearly articulate the specific skills needs in each case.

Successful collaborations are clear about what impact they will achieve.

Collaborating organisations must agree the reasons why a collaboration should happen and a clear understanding of what it should deliver. Products (such as a course or qualification) must be tailored to meet the primary business need, be as bespoke as possible and have concrete input from all organisations. The firmer the justification for collaboration, the better chance it will have of meeting its primary aims.



Stage 2: Design and set up

Stage 2 involves considering the available options for designing and setting up a collaborative partnership, and selecting an appropriate model for the organisations involved.

It is important to consider how a collaboration will be funded.

Funding a collaboration can be a challenge for universities and employers, and larger collaborations can need significant investment. Employers who can see the long-term economic returns for their businesses and have the available resource will often provide some or all of this investment. Universities also regularly invest in collaborative opportunities as part of their mainstream offer, through core teaching funding alongside individual student loan support. There can be financial risks for partner organisations, particularly where *centres of excellence* or capital investment is required. Funding is the most significant barrier for small and medium-sized businesses whose resources do not stretch to long-term investment.

Funding considerations are therefore critical to setting up collaborations. Cost-benefit analyses are important to ensure outputs provide expected returns. Also additional funding sources may be available in particular sectors or areas, for example HEFCE Catalyst Funding or through Local Enterprise Partnerships and the EU. Whatever decisions are made, it is vital to understand the risks attached to the collaboration, and to assess the expected benefits. Successful collaborations mitigate as much as possible against risks by being clear about funding processes, mechanisms, milestones and deliverables.

Successful collaborations choose appropriate models of engagement, and models and methods of delivery to meet an identified business need.

Figure 2 shows the relationship between the models of engagement, and the models and methods of delivery that can be used (or adapted) to meet the collaborating organisations' needs. No two collaborations are the same, so it is important to consider what design works best to address the business need. This is not necessarily a linear process, and in practice the models of engagement and delivery will need to be considered together as a package of collaboration.

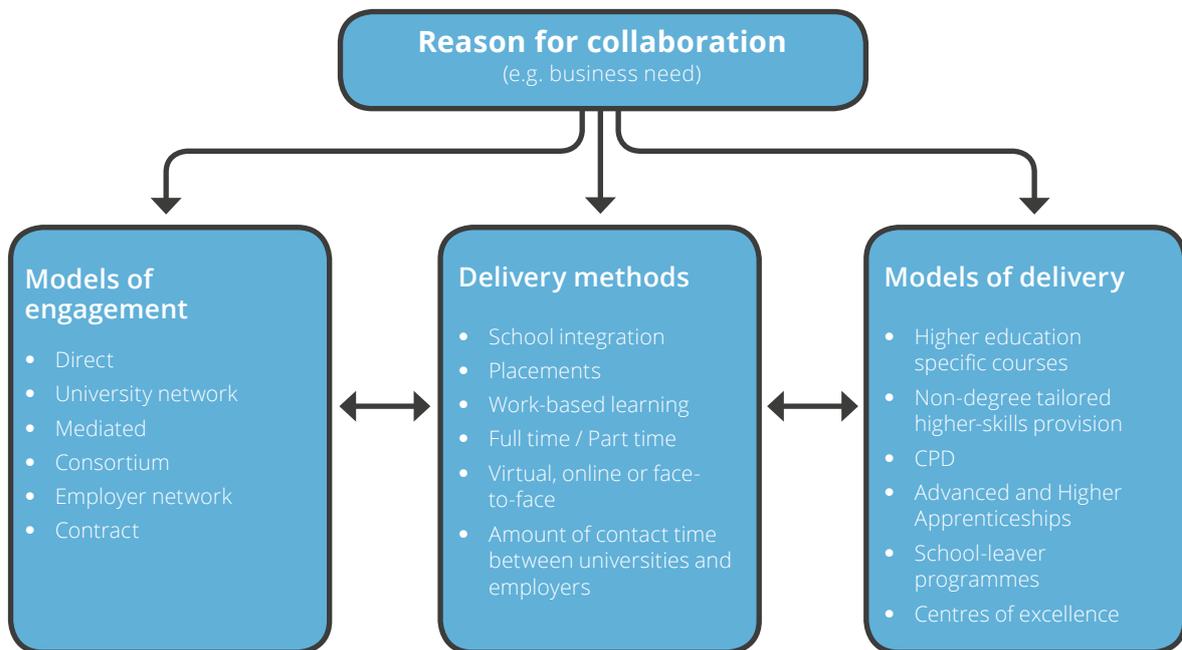


Getting [the collaboration] set up is a major investment of time, and obviously, that's a cost to a university, so you've got to be quite confident there's a market out there. It helps if you work closely with organisations like Cogent [the Sector Skills Council for the science industries], that have the market intelligence that helps identify demand or preferred types of provision. Any new initiative like this within the university, we have to have a business plan in effect and it does help if you have good links with different stakeholders."

Dr Michael Cole

*Principal Lecturer,
Employer Engagement,
Manchester Metropolitan University
(Case Study 11)*

Figure 2: Models and methods of engagement and delivery



Models of engagement

Collaborating partners can develop a wide range of different models of engagement, which can meet different types of need, depending on a given context. Common models for higher level skills development include:

- **Direct engagement:** a single university and a single employer.
- **University networks:** a single employer and two or more universities engaging in a single or interconnected programmes.
- **Employer networks:** a single university and two or more employers on the same initiative.
- **University and employer consortia:** two or more higher education providers and two or more employers collaborating on the same initiative.
- **Sub-contracted engagement:** a range of education and training providers and a network of employers working together on the same initiative under the guidance of a lead organisation, usually a university.
- **Mediated engagement:** the employment of project managers and programme staff working at the interface between higher education and industry/business²².

Models of delivery

Collaborating partners must also decide on the type of product to be delivered. Again, there is a diversity of possible options available. In many examples, collaborations provide the opportunity for co-design. This can help ensure that the requirements of individual employers, universities, consortia and other stakeholders are met. Models of delivery can include the following, and are not necessarily mutually exclusive:

- **Degree-level courses:** The development of bespoke academic courses, or additional units or modules, designed to meet the knowledge and skills requirements of industry. Examples include undergraduate degrees, postgraduate degrees (Masters and PhDs), Foundation degrees, employability skills modules, or work experience/placements.
- **Non-degree tailored higher-skills provision:** Including higher vocational courses such as BTEC Higher National Certificates and Diplomas, NVQs at level 4 and 5, and Higher Professional Certificates and Master Professional Diplomas.
- **Advanced and Higher Level Apprenticeships:** Jobs designed around the needs of employers. These Apprenticeships

work toward work-based learning, leading to a Level 3 or Level 4 Competence Qualification, Functional Skills and a relevant knowledge-based qualification²³.

- **Continuing professional development:** Employer and learner responsive courses, which are primarily for developing professional skills of those already in employment and can be accredited or non-accredited.
- **Centres of excellence:** Shared facilities that provide leadership, best practice, research, or training in a specific area (such as technology), a business concept, or skills development problem.
- **School-leaver programmes:** Where employers hire school leavers and train them on a tailored degree course. School leavers are employees from day one and spend part of their time in the workplace.

Methods of delivery

Depending on the needs of the business involved, and the delivery capabilities of the university, methods of delivery can vary from online teaching, work-based learning, through to face-to-face contact hours with universities, as well as full-time and part-time models.

Within this diverse context, collaborations should adopt the most appropriate combination of options which takes university, employer and individual needs into account. While the available options give partners a real choice of delivery, choosing which ones to use for specific purposes requires careful consideration.

Collaborations must develop clear, shared agendas.

A strong strategic focus is needed to ensure the benefits of collaborations are realised. While outputs (such as number of courses delivered, or teaching hours) may be short term, it often takes longer before the wider outcomes and impact of the collaborative activity become apparent. Establishing clear organisational goals, outlining what each organisation will contribute and achieve through the collaboration, are imperative at the design and set up stage. This could include, for example, signing a service level agreement covering all partners. In some collaborations, roles and responsibilities may be blended between organisations, and the collaboration itself can come to be seen as a business or organisation in its own right.



The AMRC [Training Centre] has come about through a real need and the drive of key people. You can't have it just as a logical idea, for it to happen it needs the heart and soul of people right at the start [...] We are lucky here in [The University of] Sheffield, we've had people absolutely committed to this as a vision from day one."

*Professor Sir Keith Burnett
Vice Chancellor, The University of Sheffield
(speaking at the National Summit on the
Future of Apprentices & Higher Vocational
Education)
(Case Study 1)*



“

It's very difficult, for example, if you're an SME [in the sustainability sector]. There is limited local support to move good ideas for resource efficient or low carbon products, services or technologies to the market. Unless you're an experienced person and know who to identify or who's the right person in the region and/or a university or a sector, it's tough to find the right knowledge or experience. Then, for those really micro-SMEs, they're even less connected and have such limited resources to find the expertise or contacts. For these SMEs we need to find a much clearer route through this maze if we are going to move towards a 'greener economy'.

*Professor Martin Charter
Director, Centre for Sustainable Design®
(Case Study 7)*

Resource planning is critical to the success of collaborations looking to achieve specific organisational and strategic goals. Partnerships are most successful when organisations can invest time and resources into creating programmes that are fit for purpose, both now and in the future. The support and input from staff across all levels and departments of partner organisations can also be important. If genuine organisational buy-in is achieved, meeting their short- and long-term goals is significantly more likely.

Successful collaborations recognise the strengths and limitations of collaborating partners.

Building a new collaboration can require a change in working practice or culture within universities and employers. For successful collaborations, universities will need to be open to taking risks, adapt to new environments, or work with people from potentially very different organisational cultures.

Large collaborating organisations, for example, can have entrenched business practices (for quality assurance, recruitment, training or working with other organisations). These can be hard to adapt to the requirements of new collaborative practices. In contrast, small businesses may lack the time or resource needed to engage effectively in new collaborations, or even to consider involvement in the first instance.

It is critical for collaborating partners to identify and work with people who are experts in their field. The importance of ensuring that collaborations include individuals who are able to “*speak the language of business*” and “*speak the language of academia*” is vital. In many cases, the most successful collaborations employ individuals who have worked in industry or academia and understand the needs of both.

Regular, open and honest communication between collaborating partners is important, as is fostering a sense of trust to openly work to address any challenges. This is particularly important when the delivery considerations of university partners (governance requirements or issues around qualification delivery) and employer partners (business needs, or enhancing the learning culture of an organisation) are different. Regular feedback and review sessions are vital. **Building relationships takes time, setting up the process takes time, and generating trust across partners takes time.**

Stage 3: Delivering outputs

Successful collaborations ensure outputs meet both employer and university needs.

A major challenge for collaborating partners is ensuring that any outputs developed can be translated into functional, deliverable products (a bespoke course, a Higher Apprenticeship, a degree). Fundamentally, universities must be able to develop a course that meets employer requirements but that they are still able to teach. Equally, employers must acknowledge any university's need to fulfil quality assurance requirements. It is good practice to ensure outputs are up to date, reviewed regularly and flexible. This is particularly important because businesses, and sectors more generally, can evolve quickly.

Collaboration should articulate the benefit of participation to employees and students.

The interests of the student or employee who will be studying through a collaboration are clearly paramount. Whether it be a short course of CPD or a graduate placement opportunity, demand from individuals and their subsequent engagement and satisfaction are critical to success. Collaborations that have lasting success ensure that those taking any course can see the benefit for themselves. Benefits should be presented and partners need to build capacity into any course to meet a potential increase in demand.

It is critical that people taking a course see the value in the route they have chosen, whether that be an alternative vocational pathway or a more traditional academic route. The choice an individual makes will be relevant for them, and different routes to employment work for different individuals.

Successful collaborations build a virtuous circle of learning, application, feedback and refinement.

Students and employees' contributions to collaboration should not be underestimated. Through their engagement in learning, individuals can influence the culture of the business and university they are working and studying in. They can inform the adaptation of curricula, qualifications and teaching to the requirements of their role and business.



The partnership has given us the ability to talk with a level of management at university that we might otherwise not have had the opportunity to do, which gives us the ability to help shape the curriculum. We want to help keep the curriculum current, and make sure that it's fit for purpose and we always have someone on their advisory committee, we are able to feed into AUB what we think is relevant."

*Amy Smith
Head of Recruitment, Framestore
(Case Study 6)*



The reason why I didn't go to college, and the reason why I went with a company [at the Training Centre] instead, was because I wanted to get an overall view on what engineering is like and what position within a company I would like to be in further down the line. Working in a company, you get an overview of all the different aspects within it rather than just focussing on the engineering qualification itself."

*First year apprentice
AMRC Training Centre*



Choice is key and building that choice into the process and the programme [is important] ... A learner has to meet the needs of that business, but we also need to ensure that the curriculum is right for that person as well, for that young person or that learner. The articulation of skills is particularly key and a greater exposure [for learners] between what's required from employers and universities is important as well."

*University representative
Forging Futures Collaborative Workshop*

In successful collaborations this creates a virtuous circle of **learning, application, feedback and refinement** with learners often acting as a broker between the employer and university. For example, these individuals can translate new ideas from their learning into their job role and support improvement of the curriculum or teaching modes based on practical experience. Not only do employers benefit, but the university increasingly refines its vocational offer to become more relevant and flexible.

Stage 4: Building for success

Collaborative partners should have a real understanding of what success looks like.

Although success will vary depending on the reasons for collaborating identified in Stage 1, the case studies in this research consistently highlighted some key features of success.

From an employer perspective, success looks like:

- Improved economic performance of employers by addressing key higher level skills needs;
- Building relevant talent pipelines;
- Businesses employing people with the right skills, at the right level, at the right pace, at the right time;
- Increased access to new talent, diversification of the workforce, with progression routes into and through employment clearly marked out;
- Employers changing their recruitment practices to consider the value and benefit of alternative routes into employment to meet sector-wide needs;
- The retention of staff within collaborating employers.

From a university perspective, success looks like:

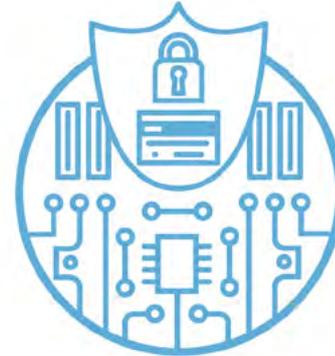
- Programmes that deliver skills and qualifications which are relevant in the short term (for business needs) and are adaptable in the long term (for sectoral and regional change), as well as giving a quality education experience to students/employees;
- Programmes that can be adapted to wider or changing business or sector needs, while introducing learning to new sectors;

- Meeting wider organisational goals: including financial diversification, providing products and services for new groups of students, widening access to higher education and employment opportunities, building new employer collaborations, and profile raising for both universities and employers (in the UK and internationally);
- Generating new collaborative contacts with universities and employers for income and the continuing adaptation of skills.

From an individual perspective, success looks like:

- Having a greater opportunity to progress into industry, into specific organisations, to go further in their current roles, or to move through the labour market effectively;
- Access to high quality and credible alternative pathways into employment that offer real choice.

Finally, partners should consider how to sustain programmes delivered through collaborations. In meeting any business need, it is important to build for the future, and not just to address an immediate problem. By considering the staged process described in this chapter, universities and employers that want and have a need to collaborate will build effective solutions for developing higher level skills.



I spoke to the Programme Leader and the Postgraduate Programme Director about how we could change the scope of the learning contract, based on my work experience, and they listened. Approaching the course [MSc in Strategic ICT Leadership] with this flexibility allowed me to spend more time going into detail in one particular area, relevant to my work, and understanding how this impacted on the business."

Rory Gaffney

Director of Business Services, Cairn Housing Association (and former MSc in IT and Strategic Leadership student)

(Case Study 10)

Where do we go from here?

As this report has shown, collaboration between universities and employers to develop alternative high skills pathways is diverse and flourishing. It can bring a range of benefits for both parties, as well as for students and employees, and the wider economy. With the economy returning to growth, business confidence slowly building, and higher education adapting to recent funding reforms and re-examining its offer, there are many opportunities for universities, employers and policymakers to unlock the potential such collaboration offers. To achieve this, there are three key messages that this research identifies, which are critical to the success of collaboration between employers and universities.

Firstly, and most importantly, collaboration should be **driven by clear and identifiable business requirements, which are demanded and recognised by all participating organisations**. These can include: shaping the talent pipeline; staff retention; technical skills needs; access to innovation; attracting new people into the industry; building on existing offers for universities; widening access to higher education; and making links to wider collaborative opportunities.

Secondly, collaboration is most effective when it is approached from the start as a **strategic partnership** between universities and employers. All partners should have a shared understanding of their drivers and objectives, and these should be complementary to their respective organisational missions and business strategies. This organisational buy-in supports committed individuals delivering the operational elements of the collaboration.

Thirdly, **products, programmes and services developed through collaboration should be appropriately tailored**, creating solutions for the identified, demand-led business requirements. Collaborations and

associated products should be developed to tackle specific problems that are not being addressed through mainstream education.

This report and the case studies that follow show there is commitment to developing alternative pathways to higher level skills from a range of universities and employers. The collaborative ethos and approaches to delivering these pathways have become **a part of the cultural norm** for the organisations involved in the case studies. These organisations have taken financial risks, have identified the broad and complex range of collaboration necessary, and have engaged in a strategic move towards a demand-driven, employer-led model – **with both universities and employers playing active roles**.

For this type of collaboration to become more widespread it is proposed that:

- **Universities** should consider the current and potential role of this form of collaboration with employers, the potential benefits, and how this activity can complement their existing institutional distinctiveness and strategy. Understanding what collaboration means for the institution can create a platform for building on existing relationships and creating new opportunities.
- **Employers** should consider which of their current skills needs might benefit from a collaborative solution with a university, and how this could begin to take shape. A useful first step is contacting institutions with known expertise in the employer's sector and beginning discussions.
- **Individual participants** should be made aware of, and have confidence in, alternative routes available as a credible and quality pathway to gain higher level skills, and to progress into and through the labour market.

Organisations such as Universities UK and the UK Commission for Employment and Skills can play an important role in both promoting and supporting collaboration. University and employer collaborations may also benefit from the development of practical guidance.

Universities and employers should seek opportunities to create new collaborations, and build on those that already exist. Collaborations can provide universities with an important component of their response to the changing higher education landscape. They support employers that recognise skills needs and want to improve their productivity and performance. They provide employers with relevant pathways into and through employment that meet their higher level skills needs. They provide existing staff and prospective new talent with the opportunity to gain the skills required to succeed in the current and future labour market. Now is a great time to grasp these opportunities, and support economic growth based on high level skills and quality jobs across the UK.

Appendix: Case studies

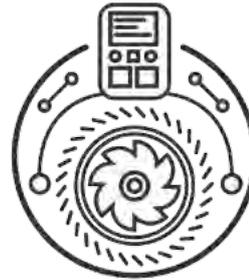
The 12 case studies that follow provide examples of good practice across university and employer collaboration for higher level skills development. They give practical examples that are innovative and showcase alternative or vocational routes into employment that meet employer needs. They show the flexibility that universities can achieve when adapting to employer needs and how employer demand for skills can be supported or stimulated.

For each case study (where possible), we spoke to university and employer representatives and individuals receiving education or training. The case studies are drawn from across the UK, and each covers one or more of six priority sectors, which link to the Government's Industrial Strategy²⁴: *Advanced Manufacturing, Construction, Creative and Digital, Energy, IT and Life sciences*²⁵.

No.	Case study	Priority sector	Region
1.	The Advanced Manufacturing Research Centre Training Centre	Advanced Manufacturing	Yorkshire and Humberside
2.	British Airways and the University of South Wales: Aircraft Maintenance Engineering	Advanced Manufacturing	Wales
3.	University of Lincoln School of Engineering	Advanced Manufacturing, Construction, Energy	East Midlands
4.	University of Derby: Higher Apprenticeship in Mineral Products Technology	Advanced Manufacturing, Construction	East Midlands
5.	Built Environment Sustainability Training (BEST)	Construction	Wales
6.	Building the Bridge (BTB): a collaboration between Arts University Bournemouth and Framstore	Creative and Digital	London and the South East
7.	The Centre for Sustainable Design®	Creative and Digital, Energy	South East
8.	Centre of Excellence for Environmental Technologies	Energy	Yorkshire and Humberside
9.	Capgemini and Aston University joint degree programmes	IT	West Midlands
10.	Edinburgh Napier University's suite of work-based Masters degrees in IT Leadership, Security and Cybercrime, and programme and Project Management	IT	Scotland
11.	Developing Science Professionals programme	Life Sciences	National
12.	GSK and the University of Strathclyde collaborative PhD programme	Life Sciences	Scotland

Case Study 1

The Advanced Manufacturing Research Centre Training Centre



What is the collaboration about?

The University of Sheffield's AMRC Training Centre, supported by the Regional Growth Fund and European Regional Development Fund, provides training in the practical and academic skills that manufacturing companies need to compete globally. As well as apprenticeships, the AMRC also offers opportunities for fully-funded progression to degree level education and beyond, including doctorates and MBA level.

Apprentices are employed by advanced manufacturing companies already working with the University in a world-class research environment, and take an 'earn as you learn' approach while receiving an advanced technical research-led education which is co-designed between academia and industry. The AMRC Training Centre also offers a range of courses for continuing professional development and the centre has close ties to the University of Sheffield's other Advanced Manufacturing Research Centres such as the Nuclear AMRC, with a considerable demand for highly-skilled, industry-ready staff across UK manufacturing.

AMRC Advanced Apprentices come from a wide range of manufacturers with operations in the Sheffield city region, including Tata Steel, Rolls-Royce, Sheffield Forgemasters, AES Seal, MTL Group and Newburgh Engineering, and from the AMRC group itself. Aged from 16 up, the apprentices spend a year learning fundamental skills at the Training Centre before completing their apprenticeships with their employers. Demand is high, with up to 40 applications per available place.

What are the drivers and benefits of the collaboration?

The AMRC Training Centre provides young people from Sheffield, and surrounding areas, the opportunity to gain the skills needed to meet the demand for 20,000 jobs that the Sheffield Enterprise Zones is aiming to create over the next 20 years. Employers can draw on the skills of a highly trained workforce, exposed to the very best in high-value manufacturing, while the University can develop the expertise of the next generation of manufacturing for the region's SMEs and economic strength.



If I was 16 and had 100 choices about where to become an engineer, I would choose here. I believe that in the future, when people think about what the AMRC produced, the most important thing will be that it made a new kind of engineer."

*Hamid Mughal
Global Director of Manufacturing for Rolls Royce*

Top tip for success

A focus on highly specialised business needs and ensuring there is a legacy from any collaboration is vital for success. The AMRC Training Centre has experienced great success because it has focused on creating innovative solutions to what can be complex customer requirements, particularly in the advanced manufacturing sector. This means that the Training Centre creates an ideal collaborative environment for nurturing tomorrow's world-class engineers to thrive and to create complex, customer-oriented value solutions for the industry and for the economy of the UK in the future.



Case Study 2

British Airways and the University of South Wales: Aircraft Maintenance Engineering

What is the collaboration about?

British Airways and the University of South Wales are working together to combine advanced technical training for one of the world's leading airlines with the enhanced career prospects of gaining a university degree. Students can graduate from this specialist course with a degree and the engineering qualification needed for a career in the aircraft maintenance industry under British Airways' EASA Part 147 Licence.

Students will have completed a BSc degree in Aircraft Maintenance Engineering, having also successfully completed the industry-standard EASA Part 66 training which is essential for a career in aircraft maintenance as an engineer and awarded under British Airways' licence. Engineering staff at British Airways also have the opportunity to study academic modules from the University at undergraduate and postgraduate level.

Top tip for success

To make your collaboration more successful, promote the benefits to all partners: students, businesses and universities. By working with British Airways, the University of South Wales is better able to promote the benefits of a career in aircraft maintenance, and stimulate demand to meet business needs. Equally, by working with the University of South Wales, British Airways is able to plan for current and future demand much more effectively.

What are the drivers and benefits of the collaboration?

The industry is facing an international skills shortage in aircraft maintenance engineers. The partnership between British Airways and the University of South Wales ensures that there is a regular cohort of young people coming into the industry with very highly specialised skills.

British Airways already employs over 1,400 people across three sites in South Wales, and the degree in Aircraft Maintenance Engineering gives them the opportunity to recruit the very best graduates with skills appropriate for their business. The partnership prepares graduates for a career in the industry, and enables British Airways to work with talented young people.



There is global competition for aircraft maintenance engineering centres, and these can only be sustained if there are the enough high quality aircraft maintenance engineers [...] In recent times, engineering training opportunities in the UK have become fewer and, because aircraft maintenance is highly regulated and standardised, for some organisations this can be very challenging. The University's partnership with BA is one way of ensuring that supply meets demand."

Dr Rhobert Lewis
Dean, Faculty of Computing, Engineering and Science,
University of South Wales

Case Study 3

University of Lincoln School of Engineering



What is the collaboration about?

Siemens Industrial Turbomachinery has manufactured industrial gas turbines in Lincoln since the 1940s but, along with other engineering companies, finding the right quality and the right quantity of graduate engineers had become difficult.

Siemens has maintained a connection with the University of Lincoln since its founding and this close relationship has led to the establishment in 2010 of a new Engineering School at the University – the first in the UK for over 20 years. This furthered the partnership between Siemens (including its supply chain, which includes many SMEs) and the University. Students at the School of Engineering are offered degree courses, accredited by the Institution of Mechanical Engineers (IMechE), which have won many awards for innovation.

What are the drivers and benefits of the collaboration?

The School of Engineering was founded to develop local capacity to produce industry-ready graduates and to establish world-class expertise in gas combustion and related technologies. Scholarships to cover tuition fees along with bursaries based on academic excellence and paid work placements during vacations are part of the degree experience. In order to develop an industrial focus to the academic programmes, Siemens and the Engineering School are co-located at the Engineering Hub on the University of Lincoln campus, where Siemens provides training for its global customer base and own employees.

This collaboration has strengthened the portfolio of the Siemens business in Lincoln and in its first three years has significantly enhanced opportunities for high-level employment in the region.



If Siemens and the University did not see this as a priority for the next 5 or 10 years, I think we would have both gone elsewhere. Siemens are engaging with us deeply, and for real long-term benefits, not just for them, but for the region too. I think without this long-term view we probably would not invest so much time and effort in ensuring it is a success."

*Professor Tim Gordon
Head of the School of Engineering,
University of Lincoln*

Top tip for success

Successful collaboration requires partnerships to think about the big picture, to have long-term goals in mind, and to think ambitiously and innovatively to meet these goals.



Case Study 4

University of Derby: Higher Apprenticeship in Mineral Products Technology

What is the collaboration about?

The Higher Apprenticeship in Mineral Products Technology combines practical skills development with the acquisition of knowledge in a higher education qualification that confirms a level of competence. It situates all this learning in the workplace and prepares apprentices for their first supervisory position. The course is a first for the mineral products industry and will attract and develop the next generation of leaders for the sector.

It has been designed in partnership with industry organisations and leading professional bodies. These include Hanson UK, the Institute of Quarrying, and the Mineral Products Qualification Council. This ensures that the Higher Apprenticeship addresses key skills issues facing employers in the sector, and it is reviewed regularly so it will continue to do so in the future.

Top tip for success

Aligning the goals of all the partners in the collaboration will increase the chances of producing a successful outcome. This will lead to:

- An acknowledgment that different organisations will want different outcomes, and for different purposes, but that a win-win outcome is still achievable;
- Building a shared understanding of what the collaboration has been established to achieve;
- Organisations supporting each other, communicating openly, being available for discussion and advice, and being seen as one collaborating business.

What are the drivers and benefits of the collaboration?

The Higher Apprenticeship has been developed to address the specific needs of the mineral extractives, aggregates, asphalt and pavements, cement production, clay and ceramics and concrete industries, all of which have an ageing workforce. With the downturn in the economy in the last decade, many experienced employees have also been lost from the workforce. A desire to bring new young talent into the sector means the Higher Apprenticeship will address critical skill shortages and open up the industry to a new generation.

The Higher Apprenticeship is valuable in its own right, but it should also be seen within a suite of wider qualifications that are beneficial to employers in the sector. This is particularly important as it provides a young person with the opportunity to progress not only into employment but also up the career ladder into management roles.



Undertaking a Higher Apprenticeship will mean that young people have a clear, mapped out career pathway into the mineral products industry and have the opportunity to study right up to degree level. The adaptability and flexibility of the qualification also means that, if they wish to progress into other roles, the learning material is transferable. This is very important to us."

*Karen Wright
Learning and Development Manager
Hanson UK*

Case Study 5

Built Environment Sustainability Training (BEST)



What is the collaboration about?

The Built Environment Sustainability Training programme (BEST) is a unique, collaborative programme led by Cardiff University in partnership with the Building Futures Group, CITB, Constructing Excellence in Wales, the Energy Saving Trust, Proskills and SummitSkills. The programme began in summer 2012 and from autumn 2014 onwards BEST will deliver subsidised, innovative CPD courses that address skills needs for architects, assessors, surveyors and advisors, building control officers, builders and installers, heads of operations, and maintenance and facilities managers across the built environment industry.

Many of these courses are accredited to the Credit and Qualifications Framework for Wales (CQFW), allowing learners to receive credit for successfully completing a BEST course. They will also count towards any requirement for CPD hours.

Top tip for success

Identifying funding opportunities and gaining and clarifying assurances around funding at an early stage is vital for the success of collaborations. The European Social Fund supports BEST and reassurances around funding enabled the recruitment and establishment of a Programme Management Office to oversee and shape ongoing activity, and to engage programme partners from the outset.

What are the drivers and benefits of the collaboration?

BEST addresses key drivers across the existing built environment landscape. The driver for sustainability in new buildings will create a significant number of new 'green jobs' but will also require up-skilling at all levels. New skills will be needed to safely and effectively install and maintain specialised products and systems, and an understanding is required of the products and processes they use, in addition to a sense of the wider context of their work.

Current training provision in Wales is regularly provided by manufacturers of specific technologies. This is often not accredited or transferable. A variety of flexible training opportunities is required in order to suit a variety of non-traditional entry routes. Employers are keen to update employee knowledge to match new products and technologies within sectors across the built environment, including in managing sustainable practices and understanding the importance and implication of green issues.

The benefits of the BEST programme are varied, but will most significantly:

- Produce long-term tailored, relevant, sustainability-focused training for the existing built environment workforce of Wales;
- Support the development of an innovative range of traditional and blended learning courses leading to transferable qualifications and skills which will future-proof the built environment.



Case Study 6

Building the Bridge: a collaboration between Arts University Bournemouth and Framestore

What is the collaboration about?

Building the Bridge (BTB) is a joint venture developed with Arts University Bournemouth (AUB) and Framestore, one of the UK's leading visual effects (VFX) companies. BTB focuses on the work-readiness of undergraduates and postgraduates, and supports students in improving their transition into employment with the VFX industry. To help with this transition, Framestore has set up an office on AUB's campus providing the *bridge* between education and industry that allows a more consistent and better developed training programme for new entrants.

Framestore has found that the hands-on, industry-relevant experience gained allows graduates to make a much smoother transition from university to the workplace. BTB is now supporting other businesses across the VFX industry too.



Our collaboration has allowed my team to highlight the importance of getting the right talent in the business as early as possible. I guess it comes back to demonstrating to the business how important that talent pipeline is and one of the ways to ensure this right at the start of the pipeline is to ensure your course or qualification is right up to date, and relevant."

*Amy Smith
Head of Recruitment, Framestore*

What are the drivers and benefits of the collaboration?

The industry's cutting edge and international success is based on scientific knowledge and artistic talent. The success and expansion of the VFX industry is threatened by the lack of a talent pipeline and weaknesses in the development of existing employees.

The industry is susceptible to change, both technological and artistic. Existing employees and new graduates entering the sector must regularly update and extend their skills. The BTB programme ensures an effective match between the needs of the labour market and the outputs of the higher education system. BTB focuses primarily on creating a talent pipeline; supporting the successful transition of graduates from higher education into employment within the VFX industry; enabling the continuing personal and professional development of VFX employees; and facilitating the exchange of staff between the VFX industry and AUB.

Top tip for success

Delivery of qualifications and training that remain up-to-date, adaptable and relevant to the needs of industry is an important factor for the success of collaborations. This is especially important in the VFX industry, where skills requirements can change rapidly as technology developments take place.

Case Study 7

The Centre for Sustainable Design®



What is the collaboration about?

An initiative of the University of the Creative Arts, The Centre for Sustainable Design® delivers a range of support for SMEs in the South East of England, providing the first dedicated support in the region for resource efficient, low carbon innovation. The Centre has designed business support and training programmes for the private and public sectors based on over two decades of research and practical experience to develop sustainable solutions and support companies' strategic development.

The Centre collaborates with SMEs and larger organisations to develop sustainable eco-innovation solutions to strategic business problems through the delivery of specialist, interactive and collaborative training programmes, which are adaptable to changing and emerging industry practices.

Top tip for success

Successful collaborations build a broader understanding of the structure and nature of a particular industry into the design of delivery models of any product or service. For example, sectors that experience fast paced technological or structural change need bespoke support on more practical issues such as skills for business development, and channelling potential through innovation.

The Centre for Sustainable Design® is able to do this by building programmes with SMEs, who are strategically nimble but need stronger networks, connections to the wider higher education system and better business promotion skills.

What are the drivers and benefits of the collaboration?

There are currently limited opportunities in the South East of England to support SME suppliers of eco-innovative products, technologies and services to deliver their significant growth potential. As such there is a need to support increased 'capacity building' amongst these businesses and across SME suppliers in the region if jobs are to be created.

The 'green economy' is underpinned by SME suppliers broadly composed of manufacturers, consultants, distributors, agents, entrepreneurs and freelance designers and these businesses include a mix of 'start ups', 'businesses in transition' (i.e. existing SMEs that are incorporating eco-innovation in new and existing products, technologies and services) and 'growth' companies. Bringing disparate organisations together generates new and innovative thinking and increases support for growth across the whole sector.



Many micro-companies are very technology and product-orientated. They are good at product development but need strong support building customer-oriented commercial and business skills. Part of our role is helping them to build these skills."

*Professor Martin Charter
Director, Centre for Sustainable Design®*



What is the collaboration about?

The Centre of Excellence for Environmental Technologies (CE:ET) is an educational partnership between the University of Bradford, Buttershaw Business and Enterprise College, Future Learners Partnership, Yorkshire businesses, and Bradford Council. CE:ET is one of six Industrial Centres of Excellence (ICE) in development across Bradford.

CE:ET brings together schools, the University and employers with an innovative approach to creating pathways into higher education and employment, pathways that map against higher-skills roles in specific priority sectors. CE:ET develops and delivers Extended Project qualifications as well as the DEC! (Designing, Engineering, and Constructing a Sustainable Environment) course, drawing upon the expertise and facilities offered by the University of Bradford's new STEM Centre, and enhances and supports attainment in STEM subject A-levels. The curriculum, work placements and CE:ET projects are designed with the Centre's board member employers. This ensures all learning and progression is designed to meet employer demand, both now and in the future.



We need lots more engineers and we need lots more people that understand the environmental sector. We need to find people that are qualified to future-proof the skills of the sector. The impact of the CE:ET is that we now have the ability to influence that by attracting students into the sector at a young age."

*Mike Robinson
Group Marketing Manager,
Associated Waste Management
(and board member of CE:ET)*

Case Study 8

Centre of Excellence for Environmental Technologies

What are the drivers and benefits of the collaboration?

For Bradford-based environmental technology businesses, significant economic growth has happened relatively quickly. This growth has resulted from new developments in cutting-edge technology across the environmental waste sector and particularly in understanding how waste is recycled and how recycling is maximised. Businesses in the region now face a change in the required skillset of employees, moving from a largely unskilled to a highly skilled workforce over a short space of time.

Bradford City Council has developed the ICE model as a programme to address key city-wide demographic and economic needs through innovative education and employer partnerships. Bradford is a young city, with nearly a quarter of its population under the age of 18, and has one of the fastest growing youth populations in the UK. Investing in the skills of these young people, particularly within the 14- to 19-year-old age range, is a critical strategic priority for the region.

Top tip for success

Given specific economic and demographic requirements, any successful collaboration should consider the pathways young people need to take into employment. Mapping the talent pipeline is not just about ensuring graduates have skills relevant to current jobs. It is also about ensuring that future generations have the opportunity, drive, desire and knowledge about particular sectors to forge successful careers in them.

Case Study 9

Capgemini and Aston University joint degree programmes



What is the collaboration about?

Capgemini and Aston University have developed two full-course degrees in Software Engineering and Information Systems, studied over five years. For the first time in the UK, Capgemini Higher Apprentices are able to progress to the second year of University study, using their Higher Apprenticeship as an entry point to complete a BSc (Hons) degree.

These are the first sponsored degrees in the UK ICT sector to be taught and delivered almost entirely in the workplace rather than attending day release at University. They include a range of bespoke modules designed specifically to help produce the software engineers and information system specialists of the future.

Top tip for success

When establishing a successful collaboration, the delivery model is often as important as the content of the degree programme. Due to the highly mobile nature of the Capgemini workforce, the company was looking for an opportunity to explore distance learning and how this would meet university requirements as well as the work-based elements of the joint degree programmes. Aston was able to meet this need.

What are the drivers and benefits of the collaboration?

The ICT sector is set to undergo significant change over the next decade. The number of vacancies is expected to outweigh the number of university graduates each year, with potentially large skills shortages arising. Because of the joint degree programme with Aston University, Capgemini will develop its own new talent to meet its business requirements; this in turn means that young people coming into the business want to stay to build their careers.

The joint degree programmes provide a strategic benefit for Aston too: students are the perfect example of 'employable graduates' as they are already employed. The success of the programme is reinforced through Aston's commitment to widening participation and ethos of 'learning-through-practice'. As such, students have a unique opportunity to gain employment and a higher level qualification on a debt-free programme.



With the apprentices, we tend to see our highest rate of retention because they have made that brave step of leaving school to join a business and they've come here from the start. We've taught them everything they know about the business and how to be a working adult. They value that, so they feel that they are going to stick with you as well."

*Sasha Morgan-Manley
Undergraduate Programme Manager, Capgemini UK*



Case Study 10

Edinburgh Napier University's suite of work-based Masters degrees in ICT Leadership, Security and Cybercrime, and Programme and Project Management

What is the collaboration about?

Edinburgh Napier University's suite of Masters degrees provides IT professionals with skills to make a greater contribution to business performance, helping businesses to ensure their IT projects are driven by strategic priorities.

The MScs are delivered through an innovative Advanced Professional Practice model using analytical frameworks such as the European Foundation for Quality Management (EFQM) to underpin the work undertaken. The majority of learning takes place in the workplace with the course content and assessment tailored to meet the needs of the learner. Edinburgh Napier has worked with employers, trade bodies, and professional associations to develop the MScs, and has had great success in embedding learning in the workplace.



There are many people in the [IT] industry who are working at Masters level who could really benefit from CPD; by thinking more widely, bringing in best practice from a broad range of experiences, and being able to stop and reflect on the work they do. As well as work-based learning, there is a personalised learning agreement that not only meets the needs of us, as academics, but also meets the needs of the employer, and ensures any learning is in-line with wider business goals."

*Alison Varey
Programme Director for Postgraduate Programmes,
Edinburgh Napier University*

What are the drivers and benefits of the collaboration?

Edinburgh Napier identified a skills gap among IT professionals and a business need for companies looking to improve through the use of ICT.

Students and their employers see the benefits of the programme as IT often becomes integrated more fundamentally across wider business activity. Staff at Edinburgh Napier benefit too: working alongside students who are business focused and have cutting-edge technical knowledge ensures that the MScs are living programmes, adaptable to the needs of employers and relevant to the students who study them.

Top tip for success

Successful collaborations that look to build CPD output should address organisational issues that bring the role of separate functions (such as IT departments) into view across businesses, rather than focussing on specific project issues. This allows employers to keep the focus on business objectives and learn from new perspectives, allowing individuals to develop within this context and reap the rewards of bespoke development. The suite of Masters offered by Edinburgh Napier are organisationally focused in their delivery. Learning aims meet the skills needs of individual employees, but are always aligned to business objectives.

Case Study 11

Developing Science Professionals programme



What is the collaboration about?

The Developing Science Professionals programme is designed to provide employers in the life sciences industry with an alternative option to graduate recruitment through the Higher Apprenticeship for Life Sciences and Chemical Science Professionals. The Higher Apprenticeship provides laboratory, scientific and technical employees with the opportunity to gain qualifications up to graduate level, with the addition of hands-on experience gained through work. The Higher Apprenticeship framework contains qualifications that are sufficiently flexible to allow the learner and their employer to select modules that best meet the needs of the job role, whilst providing the generic knowledge and competences required at each level.

Top tip for success

Successful collaborations need organisational buy-in, but they also need individuals or organisations that are going to drive collaborations forward. These can be individuals with extensive academic and industry experience, or in the case of the Developing Science Professionals Programme, an organisation such as Cogent, that has knowledge of the sector and the resources to ensure milestones are met and outputs are delivered.

What are the drivers and benefits of the collaboration?

Commonly in the life sciences sector, employers need highly skilled technicians with a very specific skillset. Traditionally, when recruited into these positions graduates have often lacked the core practical skills required to perform these roles. This is a problem in a sector with a strong history of graduate recruitment, but not of recruitment from vocational routes. Higher apprentices are trained in these core skills and in the context of the employer they work for.

Employers want to be able to 'grow their own' and the Higher Apprenticeship helps achieve this. Cogent (the Sector Skills Council for the science industry), working with employers such as Unilever, identified six pathways relevant for the needs of the industry: Life Sciences, Chemical Science, Food Science, Process Development, Packaging Development, and Healthcare Science. The Life Sciences and Chemical Science pathways are provided by the University of Kent and Manchester Metropolitan University respectively, who closely support employers and their staff to develop the skills they need.



The major benefit is its way of growing skilled people, bringing new people into the organisation, giving them the knowledge they need for the job and the opportunity to gain a qualification, but also allowing them to learn and develop in the company. We now think 'Apprentices, Advanced or Higher, should be part of our recruitment make-up.'

*Chris Mullen
Skills Development Lead, Fujifilm Diosynth Biotechnologies*



What is the collaboration about?

GSK's collaboration with the University of Strathclyde has led to the development of a new and flexible collaborative partnership. This has been instrumental in opening up unique approaches to research engagement, and personnel advancement that enables both GSK employees and additional new research students to work towards a higher research degree through GSK-based research projects.

These projects take place in GSK laboratories with both GSK Industrial and Strathclyde Academic Supervisors. Academic Supervisors and Industrial Supervisors help students to gain experience of the most up to date and rigorous scientific methods. The shared knowledge this generates is contributing to overall organisational learning within the GSK chemistry functions.



These programmes provide a research experience of clear and considerable value to all students. Whilst the programmes are demanding, the intellectual challenge, peer review, and recognition that the research work is contributing towards a higher degree qualification is exceedingly rewarding."

*Professor William Kerr
1919 Professor of Organic Chemistry,
University of Strathclyde*



The programme has provided ... career development opportunities for talented graduate staff, but also established a culture of academic rigour and enhanced scientific excellence within the wider laboratory team."

*Dr Harry Kelly
Director, Chemistry Operations, GSK*

Case Study 12

GSK and the University of Strathclyde collaborative PhD programme

What are the drivers and benefits of the collaboration?

GSK approached Strathclyde to develop a distinct platform to enhance continuous professional development and research deliverables for graduate GSK chemists, in order to equip them with the skills for greater scientific excellence. The University of Strathclyde also benefits through exposure to innovative practice, techniques, and cultural values within the pharmaceutical industry in world-leading drug development programmes.

The collaboration is contributing to enhanced learning within GSK's scientific functions and the programme has re-energised those departments in which the students work. GSK also makes a significant contribution to the development of talented scientists that will be of benefit to other companies and industries, as well as those already employed at GSK.

Top tip for success

Regular, open and honest communication between collaborating partners should be established early. For example:

- Teams must pay attention to the requirements of delivery; this is particularly important when the requirements of university partners and industrial partners are different.
- Discuss what is/is not working, what can be changed, what timescales does it need to fit within?
- As all partners are taken on a journey, which delivers challenging but rewarding benefits, trust between participating organisations needs to be implicit.

Acknowledgements

Universities UK, UKCES and CFE Research would like to thank all the people who participated in the research and particularly those who took part in the case study visits listed below.

John Francis,
University of South Wales

Nick Gooderson,
CITB

Bill Stewart,
Edinburgh Napier University

Dr Bruce Hurrell,
University of South Wales

Gareth Williams,
Construction Skills

Rory Gaffney,
Cairn Housing Association

Dr Rhobert Lewis, University of
South Wales

Cerys Ponting,
BEST

Martin McKay,
Hutchison 3G

Professor Steven Wilcox,
University of South Wales

Sarah Harris, BEST

Patrick Binchy,
Hutchison 3G

Dr Alex Chong,
University of South Wales

Dr Julie Gwilliam, BEST

Pauline Maden,
Cogent

Paul Constable,
University of South Wales

Amy Smith, Framestore

Christine Sakhardande, Cogent

Professor Zahid Baig, University
of South Wales

David Williams,
Arts University Bournemouth

Dr Michael Cole, Manchester
Metropolitan University

Jason Blackwell,
University of South Wales

Luke Savage, Sony Computer
Entertainment Europe

Chris Mullen, Fujifilm
Diosynth Biotechnologies

Professor Timothy Gordon,
University of Lincoln

Janet Smith-Harrison, University
of Bradford

Professor William Kerr,
University of Strathclyde

Andrew Stevenson,
University of Lincoln

Dr Nazira Karodia,
University of Bradford

Dr Harry Kelly,
GSK

Mike Gibbons, Siemens
Industrial Turbomachinery

Dr Liam Sutton,
University of Bradford,

Dr Malcolm Skingle CBE,
GSK

Nolan Bennett, North
Lincolnshire Council

Professor Martin Charter,
Centre for Sustainable Design®

Michelle Watson,
University of Hull,

Karen Wright,
Hanson UK

Mike Robinson,
Associated Waste Management

Sonia Allen,
Independent Consultant

Paul Wilkinson,
University of Derby Corporate

Professor Dame Julia King,
Aston University

Anne Tyrrell,
North Lindsey College

Julie Harris,
University of Derby Corporate

Professor Ian Nabney,
Aston University

Martyn Oliver, Outwood Grange
Academies Trust

Mark Osbaldeston,
University of Derby

Anouska Ramsey,
Capgemini UK

Brendan Conlon,
Centrica Storage

Carol Steed,
University of Derby Corporate

Sasha Morgan-Manley,
Capgemini UK

Endnotes

1. See LSE Growth Commission, Investing for Prosperity (2013)
2. UKCES, The Labour Market Story: Skills Use at Work, (2014) https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/343457/The_Labour_Market_Story_-_Skills_Use_at_Work.pdf
3. UKCES, Working Futures 2012-2022 (2014) https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/298510/working-futures-2012-2022-main-report.pdf; see also IPPR, Winning the Global Race: Jobs, Skills and the Importance of Vocational Education, (2014). www.ippr.org/assets/media/publications/pdf/winning-global-race_june2014.pdf
4. UKCES, Working Futures 2012-2022 (2014) https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/298510/working-futures-2012-2022-main-report.pdf; and UKCES, The Labour Market Story: The State of UK Skills, (2014). https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/344440/The_Labour_Market_Story_-_The_State_of_UK_Skills.pdf
5. UKCES, Climbing the Ladder: Skills for Sustainable Recovery (2014) https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/328282/Summer_What_0v4.pdf
6. UKCES, The Labour Market Story: An Overview (2014) https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/343448/The_Labour_Market_Story_-_An_Overview.pdf
7. UKCES, The Labour Market Story: Skills Use at Work (2014) https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/343457/The_Labour_Market_Story_-_Skills_Use_at_Work.pdf
8. UKCES, The UK Commission's Employer Skills Survey 2013: UK Results (2014) https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/327492/evidence-report-81-ukces-employer-skills-survey-13-full-report-final.pdf
9. UKCES, Climbing the Ladder: Skills for Sustainable Recovery (2014) https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/328282/Summer_What_0v4.pdf
10. HEFCE, Higher Education – Business and Community Interaction Survey (2012/13)
11. Ibid.
12. Ibid.
13. Ibid.
14. See for example, Wilson T, A Review of Business-University Collaboration (2012)

15. See for example: Dearing R, The Dearing Report – National Committee of Inquiry into Higher Education (1997); Wilson T, A Review of Business-University Collaboration (2012); and Witty A, Encouraging a British Invention Revolution: Sir Andrew Witty's Review of Universities and Growth (2013); Perkins J, Professor John Perkins' Review of Engineering (2013)
16. For information on FE college engagement with employers, see UKCES, 157 Group of Colleges and the Gazelle Colleges Group – A new conversation: employer and college engagement (2014)
17. Employer representative: "If you stopped 100 people in the street, a lot of them would understand [what is meant] by the route from school to college to university. I think [understanding] the route from school to a place of work at graduate level is not understood ... There is a disconnect that I think starts early. All the evidence suggests youngsters know what they don't want to do by about the age of 12 or 13. They don't necessarily know what they do want to do, but by then they're switched off to certain pathways."
18. These workshops were conducted under 'Chatham House Rules'. Any quotes provided within the report from these workshops have been anonymised.
19. We used three categories of innovation in choosing case studies to present in the report: Transformative innovation (where new products, models of collaboration and thinking is developed); Context-specific innovation (where practice is borrowed from other contexts, bringing new ideas into a sector for the first time); and Adaptive innovation (where incremental improvements are made to existing practice).
20. UKCES, The Labour Market Story: The State of UK Skills (2014) https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/344440/The_Labour_Market_Story_The_State_of_UK_Skills.pdf
21. HEFCE, Developing Higher Skills in the UK Workforce: A guide to collaboration between higher education and employers (2007)
22. Bolden, R., Connor, H., Duquemin, A., Hirsch, W., Petrov, G., Employer Engagement with Higher Education: Defining, Sustaining and Supporting Higher Skills Provision (2009)
23. <http://www.apprenticeships.org.uk/parents/levels-of-apprenticeships.aspx>
24. See HM Government, Industrial strategy: Government and industry in partnership, Progress Report (April 2014) https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/306854/bis-14-707-industrial-strategy-progress-report.pdf
25. An additional collaboration visit was undertaken with the Humber University Technical College, which will open in 2015. This provided an excellent overview of the benefits, challenges and conditions of success associated with starting up and establishing a new collaboration. These views are incorporated into each of the chapters.

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This report and accompanying research was commissioned by UK Commission for Employment and Skills and Universities UK and carried out by CFE.

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