UNIVERSITY OF HULL

THYME Project
Teesside, Hull and York - Mobilising Bioeconomy Knowledge Exchange

STRENGTHENING THE BIOECONOMY BY MAXIMISING GRADUATE EMPLOYABILITY

An Action Plan for Industry and Higher Education

Extended Report

Authors: Emma Peasland, Dominic Henri, Katharine Hubbard, Lesley Morrell and Graham Scott

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Contents

1   Forewords

The THYME Project region comprises Teesside and the Humber and North Yorkshire. The growing (no pun intended) regional bioeconomy provides opportunities for various interesting and fulfilling careers for our graduates who are entering a highly competitive employment landscape. Understanding the opportunities available to them and being able to present their skills and knowledge to potential employers is crucial for graduates to secure highly-skilled employment. This report identifies key approaches to the design and delivery of degree programmes that prepare students to make future contributions to the bioeconomy. Collaboration between universities and local employers is key to the recommendations in this report, and the action plans presented make practical suggestions of how to align pedagogy and employability. Bringing regional employers into the curriculum introduces students to a wide diversity of careers, helps them develop appropriate skills needed for successful employment, and develop their employability skills in an inclusive and sustainable way. This co-creation of curricula between universities and employers has huge potential, and the best-practice approaches identified here will prepare graduates for successful careers in a growing area of the economy.

Professor Becky Huxley-Binns
Pro-Vice Chancellor (Education)
University of Hull.

The bioeconomy has a key role in the UK's goal to achieve net zero carbon emissions and is a central component within the Ten Point Plan for a Green Industrial Revolution. The Teesside, Humber and North Yorkshire Region is home to significant breadth and depth in bioeconomy activities and businesses and continued growth of the sector in our region will require a highly skilled graduate workforce. This report presents wide reaching research involving bioeconomy businesses who highlighted the significant commercial benefits of collaborating and exchanging knowledge with universities and engaging with students on relevant degree programmes. The report outlines opportunities for businesses to connect capability across the region and how engagement with universities can benefit the business environment both immediately and into the longer term. By working with universities, businesses can maximise their innovation capacity and drive relationships with graduates in a sustainable and inclusive way. Increased university-business interaction and collaborations will also raise awareness of the sector with future graduates and highlight the potential of bioeconomy careers, helping prepare and retain a competent and well-equipped graduate workforce in our region.

Professor Daniel Parsons
Director Energy and Environment Institute
University of Hull

2   Executive Summary

2.1   The Challenge

The bioeconomy is key to the UK's transition to a resilient, low-carbon future and continued growth of the sector will require a highly skilled and knowledgeable graduate workforce. The Teesside, Humber and North Yorkshire region is home to significant bioeconomy-allied innovation capabilities, assets and industries yet many graduates leave their university city thereby reducing the pool of available graduate talent for business to draw from.

This report aims to bridge the gap between regional universities and businesses and identifies opportunities for employers and universities to maximise graduate employability for bioeconomy roles.

2.2   The Research

Relevant stakeholders were interviewed for the study to gain insight into the needs and practices of employers and universities. Stakeholders included:

- Graduate employers from small and large businesses in the research region.
- University teaching staff and careers advisors from the three partner institutions.
- Relevant experts including local enterprise partnership-based skills specialists.

The interviews were used to answer three questions:

1. What are regional bioeconomy employers seeking from graduate recruits?
2. How do graduate recruits match up to employers' expectations?
3. What do universities do well to develop graduate employability?

Using this information, we identified opportunities for universities and businesses to collaborate in ways that both develop graduate employability and contribute to business aims or projects. The identified opportunities are presented as three action plans for relevant groups in businesses and universities, which if adopted will develop a pipeline of graduate talent for regional employers.

2.3   Research Findings

2.3.1   What are regional bioeconomy employers seeking from graduate recruits?

Both the small and large employers who were interviewed seek graduates with relevant knowledge and technical skills. In addition to that, employers look for well-developed transferable skills including:

- Communication (written and verbal)
- Teamwork
- Project management
- Organisation
- Problem-solving

Where possible, employers also seek applicants with previous work experience that is, ideally, relevant to their business or sector.

When employers are making a recruitment choice between applicants with similar knowledge and technical skills, the most important factor is an applicant's personal attributes. Employers seek graduates who are:

- Motivated and self-starting
- Enthusiastic about the sector or role
- Accountable
- Adaptable
- Confident
- Ambitious
- Respectful

Overall, employers would prefer to "*hire for attributes and then train for skills*". (Small business)

2.3.2   How do graduate recruits match up to employers' expectations?

Employers thought that graduates were well-trained and entered the job market with the necessary knowledge from their relevant degree: *"I think the graduates are well-trained, so the knowledge is there"* (Large business)*.* However, employers identified four areas for growth where graduates were sometimes lacking in skills or awareness:

- Transferable skills: communication, project management, time management and leadership.
- Recruitment skills: an understanding and ability to sell strengths during application and interview and to navigate assessment centre tasks (where applicable).
- Professional behaviours: email etiquette and workplace behaviour including completing work during office hours.

- Commercial awareness: understanding the need to generate profit and protect profit margins.

2.3.3 What do universities do well to develop graduate employability?

Employers, academics, careers service staff and skills experts collectively identified four best practice approaches that universities use to develop the skills employers seek alongside subject knowledge:

- Specific employability provision in the curriculum: e.g. compulsory skills modules that deliver employability content such as CV writing.
- Teaching that develops transferable skills: using research-led teaching to develop transferable skills as well as subject knowledge and technical competence.
- Industry interactions in subject teaching: inviting employers to contribute to a programme e.g. via guest lectures or by setting projects for students.
- Work experience: e.g. year in industry placements, internships, consultancy project modules, which develop students' commercial awareness and professional behaviours.

2.4   Action Plans

Based on the interviews and research findings, three action plans were developed that highlight mutually beneficial opportunities for businesses and universities to collaborate and enhance graduates' employability.

Collaboration between businesses and universities offers benefits for both parties. For example, businesses can begin identifying future talent or have students work on industrially relevant problems that contribute toa business. Whilst universities can provide students with opportunities to practice applying their learning to real-world questions or problems and develop professional behaviours and skills through their subject learning.

These benefits and the action plans are explained in more detail in the full report.

2.4.1   Action Plan for Bioeconomy Employers

Offer opportunities for students to gain real-world experience

Consultancy or group projects (students contribute to solving a genuine problem in your business)

Work placements (E.g. short internships or year in industry placements)

Provide current and realistic insights into business practice and needs

Guest lectures related to your expertise

Guest talks at careers events/ in degree programme skills provision

Support students to succeed in recruitment

Help with mock recruitment events/application coaching

Provide mentorship to students wanting to work in your industry

Ensure that opportunities are in keeping with your business aims and capacity

Figure 1: Action plan for bioeconomy employers identifying oportunities to collaborate with universities for mutual benefit

2.4.2   Curriculum Design Action Plan to maximise graduate employability

Integrate pedagogies that develop transferable skills

E.g. presentations, group work, problem-based learning, authentic assessment self-reflection

Include opportunities for real-world insights in the curriculum

E.g. projects set by relevant local businesses

Opportunities for students to meet employers e.g. guest lectures or field visits

Offer a variety of high-quality work experience opportunities

E.g. a year in industry, short internships, weekly placements, consultancy projects

Integrate specific employability provision at the appropriate stage

E.g. CV writing or mock recruitment events

Integrate opportunities for mentorship from relevant employers

Provide opportunities for students to reflect on their development throughout the programmes

Ensure that opportunities are authentic, embedded, assessed and planned at a programme level

Figure 2: Curriculum design action plan for universities highlighting approaches for embedding employability-enhancing opporunties into programmes

2.4.3   Relationship Management Action Plan to support programme delivery

Support academic staff to engage employers in programmes

E.g. via an employer engagement specialist who builds relationships with numerous relevant local employers

Provide time for academic staff to develop their understanding of relevant industries

E.g. by providing time for staff to visit a business or take a short placement

Provide support for employers and students to engage with work experience

E.g. financial support for employers to offer internships or students to be able to take a placement year

Support academic staff to embed novel pedagogies and facilitate reflection

E.g. training or development to increase confidence to incorporate novel approaches
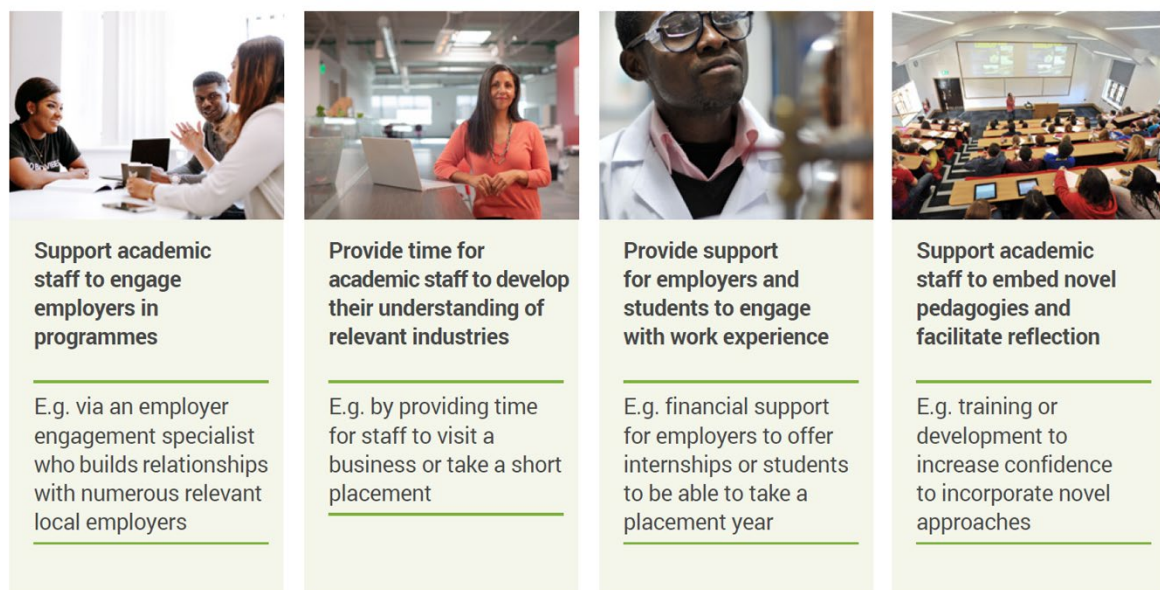
Figure 3: A Relationship management action plan highlighting support that maximises the employability-enhancing opportunities of programmes

2.5 Conclusion

- Collaboration between employers and universities can provide mutually beneficial opportunities to enhance graduate employability.
- The research that informed this report showed that regional bioeconomy employers are satisfied with graduates' knowledge and technical skills.
- Employers identified a number of areas of transferable skills and professional awareness where graduates were less prepared.
- Universities use several effective approaches that can enhance graduate employability for bioeconomy roles but the effectiveness of these could be increased with additional institutional support and industry involvement.
- Opportunities for collaboration and support to maximise graduate employability are presented in action plans for employers and for universities.
- Adopting these action plans will maximise graduate employability and support positive employment outcomes with benefits for graduates, universities and bioeconomy employers.

Introduction

3   The Challenge

The bioeconomy comprises businesses that use bioscience or biological knowledge to reduce non-renewable resource use and is a sector that provides an important contribution to the UK's transition to a resilient, low-carbon future. The bioeconomy is a key provider of green jobs employing over 5 million people in the UK with a value of £220 billion GVA[1]. In the north of England, the bioeconomy supports over 400,000 jobs[2] and the Teesside, Humber and North Yorkshire region is home to significant bioeconomy-allied innovation capabilities, assets and industries.

Growing the regional bioeconomy further will require a highly skilled and knowledgeable graduate workforce. Collectively, over 16,000 students graduate from the universities of Teesside, Hull and York each year[3] potentially providing a large pool of graduate talent for regional businesses[1]. However, employers report that graduates lack some important skills[4] and many cities, including Hull and York, do not retain graduates who moved there to study[5].

This report aims to bridge the gap between universities and employers by identifying opportunities for collaboration that benefit both graduates and businesses and retain highly skilled graduate talent in our region. Providing, or contributing to, a diversity of opportunities underpinned by the recommendations in this report will create an inclusive curriculum, which maximises the likelihood of all students being able to participate in at least one employability-enhancing experience. Adopting the recommendations in this report will ensure that degree programmes prepare highly skilled, employable graduates for the growing bioeconomy.

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[1] York St. John University also contributes to the bioeconomy workforce in the Teesside, Humber and North Yorkshire region. York, Hull and Teesside are the focus here as they are THYME Project partners.

3.1 What is the bioeconomy?

The bioeconomy incorporates business operations that use bioscience or biological knowledge to reduce non-renewable resource use and, therefore, increase the sustainability of operations. The UK government has identified six opportunities for growth in the bioeconomy, which encompass sectors including agriculture, food, chemicals, bio-based product manufacture such as bio-plastics, forestry, bio-fuels and medical or pharmaceutical production [1].

There are also organisations that support bioeconomy business such as logistics firms that streamline operations and further increase sustainability. In this report, the bioeconomy is considered in this broad sense and acknowledges that operations within and outside of the bioeconomy might exist in the same business. For example, petrochemical companies that produce products from non-renewable resources as well as growing a bio-based fuel or chemical arm.

4   What is Employability?

In this report, employability is defined as:

a set of achievements – skills, understandings and personal attributes – that make graduates more likely to gain employment and be successful in their chosen occupations, which benefits themselves, the workforce, the community and the economy [6]

Therefore, an employable graduate has the necessary:

Knowledge	Understandings are the subject-specific knowledge that is learnt during a degree programme and is required to be effective in a role.
Skills	Skills are used to 'do something'[7] and include **technical** role-related skills (e.g. specific laboratory procedures, coding or software use) and **transferable** skills applicable in numerous roles (e.g. communication, teamwork and numeracy).
Personal attributes	Behaviours related to someone's personality, psychology and upbringing. Examples include confidence, resilience, motivation, enthusiasm etc.

The specific skills, knowledge and attributes required to be successful and the relative importance of each will vary in different roles and industries.

5   The Research

This research was part of the THYME Project, which is a Research England-funded collaboration between the universities of Teesside, Hull and York that aims to build on regional bioeconomy assets by promoting knowledge exchange between higher education institutions and regional businesses.

This project aimed to assess graduate employability in the regional bioeconomy by collecting data from four groups of relevant stakeholders:

- Bioeconomy businesses.
- Academic staff who teach subjects from which students might enter bioeconomy roles.
- Careers advisors in the partner universities.
- Relevant experts with a specialism in workforce skills (e.g. skills staff based in Local Enterprise Partnerships).

Stakeholders were interviewed during 2020 to provide their perspective and experiences of a range of topics including:

- The qualities of an employable graduate.
- The experiences or teaching approaches that best develop graduate employability.
- Any graduate skills deficits in the regional bioeconomy.
- Existing opportunities for students to interact with industry and develop their employability.

In total, 33 participants were interviewed. The sample comprised:

Industry stakeholders	10	Staff from bioeconomy businesses with experience of graduate recruitment or line management. This group included multinational corporations and small and medium enterprises.
University teaching staff	10	Academic staff from the three partner universities who taught on programmes from which students might graduate into bioeconomy-based careers (e.g. Chemical engineering, biomedical science, biochemistry, geographical and environmental sciences, biology).
University careers staff	6	Careers advisors from the three partner universities who support students on programmes from which students might graduate into bioeconomy-based careers (e.g. STEM subjects).
Relevant experts	7	People whose job entailed a specialism in skills development in the workforce (e.g. skills-focussed staff from the regional Local Enterprise Partnerships).

The data from the interviews was used to answer three questions:

1. What are regional bioeconomy employers seeking from graduate recruits?
2. How do graduate recruits match up to employers' expectations?
3. What do universities do well to develop graduate employability?

The results from these questions were then used to identify opportunities for universities and bioeconomy business to collaborate in ways that maximise graduate employability. These are presented as action plans that identify steps that universities and employers can take to provide opportunities that develop students' employability and prepare graduates for roles in the bioeconomy.

Research Findings

6 Research Findings

6.1 What are regional bioeconomy employers seeking from graduate recruits?

The ten employers were asked what qualities the ideal graduate recruit would have and about the relative importance of knowledge, skills, and personal attributes. Their answers varied dependent on the specific organisation and role, but there were some notable patterns in employers' responses.

6.1.1 Knowledge

Knowledge was an important pre-requisite to be considered for a role and was assessed using qualifications. For example, if a graduate had a chemistry degree, employers assumed they had good fundamental chemistry knowledge, which indicated that they would be able to easily gain any specialist knowledge needed for a role. Knowledge was considered to be the least important quality in recruitment decisions provided that the applicant held a relevant degree.

In some large businesses that operated graduate schemes, subject knowledge was rarely considered important. These businesses would recruit graduates from a range of disciplines and then offer training in the relevant knowledge required for the role. Some graduate schemes did, however, seek graduates with an allied degree e.g. a STEM-based degree or a business degree if the role related to sales, for example.

6.1.2 Skills

A relevant degree was also used to indicate that a graduate held any basic technical skills required for a role. Returning to the chemistry example in Section 6.1.1, the degree would signal that a graduate could work safely in a laboratory and have basic laboratory skills. Employers expected that they would need to train a graduate in the specific technical skills for their workplace.

Employers listed several transferable skills they sought when recruiting graduates. The most mentioned transferable skills were:

- Communication (both written and spoken)
- Teamwork
- Project management
- Organisation
- Problem solving.

Less commonly listed transferable skills that were still desirable included:

- Analysis
- Numeracy
- Leadership
- Safety management.

6.1.3 Personal attributes

The most commonly listed qualities that made graduates employable were personal attributes. Employers sought graduates who were:

- Motivated and self-starting
- Confident
- Enthusiastic about the sector or role
- Ambitious
- Accountable
- Respectful
- Adaptable

Some employers from large multi-national businesses with graduate training schemes listed only personal attributes when asked to describe the ideal graduate recruit. Employers from smaller businesses sought a greater variety of qualities as graduates working in their organisation would need to be more flexible or, as one stated: *"the thing is with small businesses is you often have to wear a number of hats"* (Small business).

In most cases, personal attributes were considered the most important qualities when it came to making a recruitment decision. Provided that graduates had a relevant degree, businesses thought that it would be easy to teach the role-specific knowledge and skills, but questioned whether it would be possible to train personal attributes. For example, one stated:

> *"I can't employ somebody who has no knowledge, but I will forego detailed subject knowledge for the right attitude to work because I can train in the detailed knowledge"* (Small business)

Overall, businesses would prefer to *"hire for attributes and then train for skills".* (Small business)

6.1.4 Work experience

Employers also highlighted that the ideal graduate recruit would have some previous work experience. This would ideally be relevant to their business or sector and they expected that graduates might have gained such experience through a year in industry that was part of their

degree or through a shorter work experience placement or internship. Work experience was valued because it helped graduates to develop and practice professional workplace behaviours.

6.2   How do graduate recruits match up to employers' expectations?

Employers acknowledged that no one would be the ideal applicant, and that they needed to align their expectations for previous experience with the career stage of a graduate. Overall, interviewees suggested that graduates were well-trained and entered the job market with necessary knowledge from their relevant degree:

> *"I think the graduates are well-trained, so the knowledge is there".* (Large business)

However, there were four areas for growth where graduates could improve:

- Transferable skills
- Recruitment skills
- Professional behaviours
- Commercial awareness

6.2.1   Transferable skills

Transferable skills were the most cited areas for growth. Employers thought that graduates could better develop four skills before reaching the job market.

- Communication skills: the ability to give presentations to business stakeholders or customers and to write professional-style reports rather than academic-style essays.
- Project management: this related to being organised, agreeing and undertaking necessary tasks and understanding project planning tools such as Gantt charts.
- Time management including a need to be flexible.
- Leadership, or possession of the qualities to become a future leader.

6.2.2   Recruitment skills

Three employers indicated that graduates do not always perform well during the recruitment process. Some graduates fail to sell their strengths in an application or interview or have not done the necessary research into the employer and/or the role to demonstrate their suitability for the post.

Companies that used assessment centres to recruit to graduate schemes sometimes found that graduates did not understand how to navigate this process and failed to shine. For example:

> *"in situations like assessment centres, you see a really fantastic applicant may bomb on the day".* (Large business)

6.2.3   Professional behaviours

Some graduates, especially those without prior work experience, can lack an understanding of what is required of them in a professional environment. Examples included not knowing how to write a professional email or behave in the workplace. One employer discussed how graduates needed to recognise that the working day was not flexible, and that graduates needed time management skills that would allow them to meet deadlines within the working day.

6.2.4   Commercial awareness

A lack of commercial awareness was raised by some employers. Graduates need to understand that their employer is a commercial organisation and therefore, that they need to be sufficiently productive to offset the costs of their employment. Similarly, graduates need an awareness of material costs and the need to ensure that resource use remains within any budgetary constraints.

6.3   What do universities do well to develop graduate employability?

All interviewees were asked what universities did well to develop graduate employability and four best-practice approaches were identified:

- Specific employability provision in the curriculum (often referred to as skills modules)
- Subject teaching that develops transferable skills as well as knowledge
- Industry interactions in subject teaching
- Work experience

6.3.1   Skills modules

Skills modules often introduce students to skills and knowledge required for the recruitment process. These modules form part of the assessed programme and, therefore, students are required to attend and undertake assessment tasks, which might include writing a CV and/or a mock

application for a role students choose from current recruitment adverts or a selection they are offered.

These modules are frequently delivered in partnership with careers service staff who are specialists in coaching students to navigate recruitment processes. However, some careers staff cautioned that these opportunities are not always valued by students if they are not well integrated into a programme or are delivered out of sync with the times students are seeking employment or placements.

6.3.2   Subject teaching that develops transferable skills

Academic staff identified several approaches that give opportunities for students to develop skills that will make them more employable and prepare them for success in employment. For example, asking students to work in groups with their peers can develop teamwork and collaboration skills. If the groups are working to address a problem, students' problem-solving skills can also be developed.

Employers cited communication skills as important but also as a skill that some graduates can lack. Both written and spoken communication can be developed during subject teaching. For example, setting authentic assessment tasks whereby students submit an assessment in a style commonly required in industry such as a technical report, rather than an academic essay, can develop written communication. Similarly, requiring students to present to staff and peers can develop presentation skills.

6.3.3   Industry interactions in subject teaching

Businesses, academic staff and careers staff all highlighted the benefit of providing opportunities for students to interact with businesses through their studies. Two effective examples are inviting guest lecturers from industry and involving industrial partners in the setting and assessment of group projects.

Guest lectures were considered valuable because they allowed students to hear about industrially relevant topics and how the theory that they may have learnt is applied in industry. Including opportunities for students to hear about the guest's career path and ask questions about their experience was also thought to be beneficial.

Industry-set group projects were regarded highly as these combine the opportunity for students to develop transferable skills with the opportunity to engage with employers. Students work on real-world problems and are normally required to present their findings to the industry partner who is involved in the assessment process.

6.3.4   Work experience

Employers rated work experience highly in part because graduates who had work experience had a better understanding of professional behaviours and commercial awareness. A year in industry taken between the second and third years of a degree was the most common example of work experience, but academic staff and careers advisors indicated that uptake of these opportunities could be low and smaller employers suggested that they had difficulty offering placements because of the associated financial and time costs. Work experience could also take the form of a summer internship. Two of the universities subsidised internships to encourage employers to offer short work experience opportunities in this way.

Not all students can engage with work experience offered in these forms, for example, disabled students or students with caring responsibilities may face additional barriers to finding or engaging with work experience, so it is important that relevant opportunities are also built into the core curriculum. These could comprise regular short visits to an employer to complete a project, or students could act (singly or in groups) as a consultant for an employer to complete a short project.

6.3.5   Curriculum integration

Sections 6.3.1 – 6.3.4 give examples of effective approaches that universities use to develop valued graduate qualities. However, it is important that opportunities are well-integrated into the curriculum and not implemented as an add-on or box-ticking exercise. Activities provided outside of the regular curriculum may pose additional barriers to some students and those that are included in teaching time, but are not well integrated can be undervalued by all students. Indeed, careers staff and academics reported that when employability content is included to 'tick a box' but not well integrated into students' wider learning, students do not enjoy or value the experience, which is evidenced in poor module reviews. Consequently, employability-enhancing content should be integrated into curricular to ensure inclusivity and sustainability as well as perceived value and usefulness.

Alongside these approaches, students must be supported to recognise the value of the opportunities to enhance their employability. Previous research[4] and these interviews suggested that students can struggle to identify the skills and attributes they have developed in their degree and to understand how these are useful in the job market. For example, students who have planned and delivered a field-based group project may fail to identify this as an example of e.g. teamwork, planning or project management skills development when applying for a non-field-based role. If students do not recognise their skills and attributes, they are unable to articulate and demonstrate them during recruitment.

Action Plans

7   Action Plan for Bioeconomy Businesses

7.1   Why engage with universities or recruit a graduate?

7.1.1   Why engage with universities?

Engaging with local universities can have multiple benefits for a business. There may be opportunities to:
- Begin identifying future talent who could contribute to a business as an employee after graduation.
- Set students real-life projects that contribute to their assessment and provide solutions to current business problems or questions.
- Give guest lectures that provide students with an insight into your industry and raise awareness of a business as a desirable employer.
- Host students on work experience placements or internships where they can address problems or complete projects that are outside of present staffing capacity.
- Publicise a company and any future employment opportunities.
- Provide an opportunity to demonstrate a business's contribution to the local community or corporate social responsibility.
- Influence degree program content in relevant subjects by participating in an employer panel.
- Gain access to academic expertise.

7.1.2   Why recruit a graduate?

Graduates have numerous qualities that can contribute to the growth and success of a business. Through their university studies, graduates have developed a wide range of skills alongside their subject learning. The UK Qualifications Assurance Authority requires universities to ensure that graduates have developed skills that will benefit employers including:
- Analytical and problem-solving skills.
- The ability to evaluate evidence and propose solutions to questions or problems.
- An ability to use their initiative and hold personal responsibility and to make decisions in complex situations [8].

Employers in this research suggested that these and other skills gave graduates an ability to identify business improvements that increase productivity and profit. The nature of these high-level transferable skills means that graduates from numerous degree programmes may be suitable for some roles therefore widening the potential pool of applicants.

A graduate may need more training and development than a more experienced appointment, but any initial financial or productivity costs associated with this are often offset by a lower starting salary. There may also be financial support available for graduate training and development. For example, through local authorities, Local Enterprise Partnerships or industry support networks. Recruiting a graduate provides the opportunity to ensure that any training and development activities ensure that they are an ideal fit for the business and investment in a graduate's development can reap returns in terms of loyalty.

7.2   Action plan

This research identified three mutually beneficial opportunities for businesses to collaborate with universities. These can benefit both the business and students' development. They are outlined in Figure 4 and explained in more detail below, but all offer a chance to contribute to businesses' corporate social responsibility profile as one interviewee identified:

> *"[There is a] public relations benefit as well. Because there is a benefit to us as a company …*
> *and having these opportunities [can] popularise our status in the city … I don't think you can*
> *do too much to try and create a positive around the brand".* (Small business)

Offer opportunities for students to gain real-world experience

Consultancy or group projects (students contribute to solving a genuine problem in your business)

Work placements (E.g. short internships or year in industry placements)

Provide current and realistic insights into business practice and needs

Guest lectures related to your expertise

Guest talks at careers events/ in degree programme skills provision

Support students to succeed in recruitment

Help with mock recruitment events/application coaching

Provide mentorship to students wanting to work in your industry

Ensure that opportunities are in keeping with your business aims and capacity

Figure 4: Action plan for bioeconomy employers identifying opportunities to collaborate with universities for mutual benefit.

This action plan outlines opportunities that businesses could pursue to contribute to the development of highly skilled graduates for their industry and region but does not suggest that businesses must pursue *all* these opportunities, rather any that are in keeping with business capacity and aims.

Employers who wish to collaborate with their local universities in these ways could approach the leaders of relevant programmes or the university careers service. Details for both contacts are normally published on university websites.

7.2.1 Offer opportunities for students to gain real-world experience

Work experience allows students or recent graduates to develop professional workplace behaviours and increased commercial awareness. Work experience also offers employers a low-risk opportunity to identify potential future graduate employees. Businesses in this research reported several benefits from providing a work experience opportunity including:

Delivering cost savings

> *"If you had to put a value on the contribution of [a placement] it's a significant cost saving to the business. So, they could be [given] continuous improvement projects … we had a process that was having a lot of waste on the site and an industrial placement student [undertook a project that delivered] some major cost savings to the business".* (Large business)

Providing a fresh perspective

> *"The benefit is that you get [a project] done and the individual has not got another million things to do which distract them … they can focus on it and approach it with a fresh set of eyes, without any preconceived experiences … they're not going to start off by saying 'it's always been like that' or saying, 'I know what's wrong with that'. They can come in and look at it and say, 'this is what you need to do'".* (Small business)

Providing a staff development opportunity

> *"[Having a placement student gives] the more junior people within the team the ability to manage somebody else. So, there's an internal management role which gives a chance for somebody to learn that skill".* (Large business)

Identifying future employees

> *"One of our current graduates that I organised a placement for whilst they were at uni and now they're on the graduate program … [if a student placement] goes well they'll then tend to sway back to [the same company after graduating]".* (Large business)

It is normal for a placement to be a paid opportunity and so for some businesses, offering a year-in-industry placement is not feasible. However, some universities subsidise a student or recent graduate's salary for a short internship, which helps smaller businesses offer and benefit from a work experience placement.

> *"Internships work really well because we can say [to a business] 'well let's bring in a student or a graduate for 12 weeks, we'll give you some money to mitigate some of the risk and the cost and let's see what they do', and often an SME will say 'well they've given us a different perspective on things' or 'we didn't realise about this, and they've brought a real level of insight to the business and had a massive impact'".* (Careers advisor)

Non-placement work experience: Consultancy or group projects

Another way of offering and benefiting from work experience for a business that cannot offer a placement is to provide projects that students work on as part of their assessed coursework.

> *"We had a student join us for about 10 weeks … and they undertook a piece of work we were looking at around office psychology and what's the best use of our office space in terms of motivating and energising our people …   we see that really as a win-win … [the project] was part of their assessed work and they had to then present their findings back to us".* (Large business)

These opportunities can be offered to individual students who act as a consultant for a business agreeing on a project output and delivery plan and then working to deliver the project within the planned timescale. In the case of the quote from a business above, the student consultant worked in the company office, but projects can also be completed by students working remotely.

Alternatively, businesses can offer a project for a group of students to tackle as part of their assessed work. Some modules using business-set projects bring together students from multiple degree programmes, which provide an interdisciplinary approach to the problem whilst others feature groups of students on the same degree course.

In return for the time students spend working on a problem and developing solutions, it is normal for a business to be involved in the assessment of the students' work. This may entail attending an event where students present their findings and solutions and discussing perceptions of the quality of the output with teaching staff.

7.2.2   Provide current and realistic insights into business practice and needs

Academic and careers staff can explain to students the importance of skills or learning opportunities, but hearing this directly from the industry in which students wish to work can strengthen the message and help students to identify and target their learning and development needs.

Graduates are also more likely to enter roles with realistic perceptions of what working in a particular industry requires. Businesses in this research discussed how opportunities to contribute to lectures or careers events could be useful occasions to talent spot, publicise upcoming roles, placements or internships or raise students' awareness of their business as a desirable future employer.

Guest lectures

University teaching staff hold extensive subject expertise, but do not always have an industry background and there can sometimes be a gap between their expertise and the practicalities of how this knowledge is applied in industry. Some lecturers invited industry practitioners to contribute to teaching by giving guest lectures and explained how this can make a valuable contribution to a programme:

> *"People come in from industry and will give a one- or two-hour presentation about their particular [industry]. It gives students [the opportunity to hear] things that are industrially relevant rather than us giving the abstract theoretical. Also, they're obviously then directly meeting people in the … sector".* (Academic)

> *"[We] invite speakers from the industry … and this is very interesting because the students get the opportunity to ask questions about their career path and the challenges they have experienced".* (Academic)

Guest talks at careers events or in skills modules

These are similar to guest lectures but with a career and employability focus. Large careers events may reach students from several programmes whilst skills modules gather students from a smaller selection of allied programmes.

In these talks, speakers often share their career path, explain what experiences help graduates gain employment in their industry and what a typical role is like in practice. Speakers can expect to be asked questions by students interested in seeking a similar role.

7.2.3   Support students to succeed in recruitment

Several businesses stated that some students perform poorly in recruitment tasks. Examples included writing applications that failed to highlight strengths, difficulties participating in assessment centres and an inability to provide impressive answers in interviews.

Some businesses helped to develop students' recruitment skills by hosting mock recruitment activities for university careers services. These included mock interviews or mock assessment centres and gave students opportunities to gain experience and receive feedback as well as networking with employers.

Similarly, providing mentorship to students on relevant programmes can help to prepare them to succeed in recruitment and may raise awareness of a business as a desirable place to work. Some universities have mentorship opportunities built into skills modules.

8   Action Plans for Universities

8.1   Why target employability and engage with employers?

Employability literature [9, 10] and comments from interviewees in this research indicate that some academic staff are reluctant to focus on employability in subject teaching either for fear that it will dilute academic integrity or because they do not think that it is within their job remit or skill set to do so. However, employability metrics are one of the tools universities use to market themselves, so there is an incentive to embed employability in the curriculum. Engagement with local industry is one way to increase the employment focus of the curriculum in a sustainable way for academic staff.

Students are expected to graduate with transferable skills that are valuable to employers, however, employers and researchers have indicated that some students do not recognise all of the skills they develop in their degree or understand how these relate to the job market [4]. Students who are unable to recognise the skills that make them employable will find it more difficult to excel in interviews (a problem that employers in this study have highlighted) and may be unemployed or underemployed.

Employers in this research stated that they were largely happy with students' knowledge and the basic technical skills they develop during their degree, yet they identified areas for growth in students' transferable skills development. This suggests that including some focus on employability *alongside* subject teaching would enhance, not detract from, degree programmes.

Developing students' employability does not necessarily require specific provision and can be incorporated into subject content. For example, by providing opportunities for students to present to their peers or work in groups, which are opportunities that can develop communication and teamwork skills.

Importantly, students need to know that they are developing these skills in such opportunities and therefore, transferable skills development should be clearly and transparently signposted to students. Additionally, reflection has been identified as an important tool to help students identify how their learning has developed their employability [10] and as such, students should be invited to participate in structured reflections on their skills development and employability.

8.2 Competence

Employers in this research were asked to discuss the relative benefits of skills, knowledge and personal attributes in determining graduate employability. Employers indicated that assuming applicants had the necessary knowledge and technical skills, transferable skills and personal attributes would determine their hiring decisions.

Employers are seeking *competent graduates*: Those who hold the desired mix of skills, knowledge and personal attributes. Competence is achieved through the possession of an integrated set of skills, knowledge and personal attributes that are required for success in a particular task or role [11].

To achieve competence, students must be provided with opportunities to develop their transferable skills and personal attributes alongside their subject learning and technical skills. Students must also be supported to recognise their development as previous research has shown that graduates do not always recognise all the skills they have developed through their degree or understand how to map them onto the job market [4].

Grounding provision in a competence-based higher education framework will help develop highly skilled, employable graduates for roles in industry and academia. One model of competence-based higher education developed by the University of Hull [12] is shown in Figure 5.
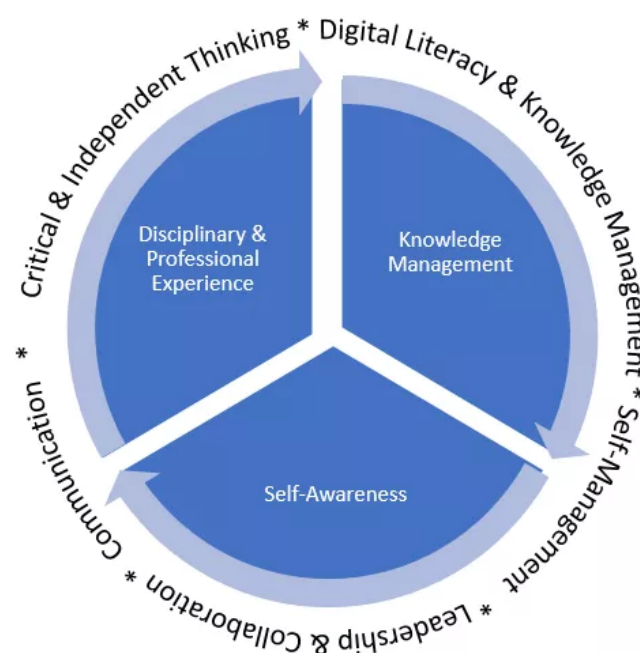

Figure 5: A competence-based higher education framework developed by the University of Hull [12]

A programme grounded in the competence-based higher education model in Figure 5 provides opportunities for students to develop and recognise all aspects of competence through the three components of the model:

1. Knowledge management skills are acquired through subject learning as students become proficient at sourcing, selecting and communicating knowledge.
2. Providing opportunities for disciplinary (subject-related) and professional experiences will allow students to practice applying their knowledge and to develop transferable skills. For example, working in groups with peers to tackle problems set by academic staff or industry partners develops transferable skills such as teamwork, planning, project management, leadership and communication whilst applying their subject knowledge.
3. Opportunities to raise students' self-awareness are crucial to help them to identify the knowledge, skills and attributes they have developed so that they can best present themselves and their abilities to potential employers during recruitment.

Based on the need to offer students opportunities to apply and reflect on their learning identified in the competence-based higher education model and the findings of this research, two action plans for universities are presented below. The plans integrate to provide students with opportunities to maximise their employability. The first is a curriculum design action plan, which highlights approaches that provide opportunities for students to develop necessary skills, knowledge and attributes. The second is a relationship management action plan, which highlights support provisions that will maximise the effectiveness of curricular for developing employability.

8.3 Curriculum design action plan to maximise graduate employability

This research identified four key approaches that can be incorporated into programmes to enhance students' future employability by providing opportunities to develop students' transferable skills, attributes and employability can be incorporated into programmes whilst also delivering subject knowledge. These actions are summarised in Figure 6 and explained in more detail below.

Integrate pedagogies that develop transferable skills	Include opportunities for real-world insights in the curriculum	Offer a variety of high-quality work experience opportunities	Integrate specific employability provision at the appropriate stage
E.g. presentations, group work, problem-based learning, authentic assessment self-reflection	E.g. projects set by relevant local businesses. Opportunities for students to meet employers e.g. guest lectures or field visits	E.g. a year in industry, short internships, weekly placements, consultancy projects	E.g. CV writing or mock recruitment events. Integrate opportunities for mentorship from relevant employers

Provide opportunities for students to reflect on their development throughout the programmes

Ensure that opportunities are authentic, embedded, assessed and planned at a programme level

Figure 6: Curriculum design action plan for universities highlighting approaches for embedding employability-enhancing opportunities into programmes.

8.3.1 Integrate pedagogies that develop transferable skills alongside subject learning

Numerous approaches can be used to allow students to develop transferable skills at the same time as subject knowledge. For example, asking students to complete a group assessment task will provide an opportunity for them to develop their teamwork and communication skills as well as to apply the knowledge they have gained through their studies. Similarly, requiring students to present subject information to their peers will develop presentation and communication skills. Some examples of employability-enhancing pedagogical approaches highlighted in this research are shown in Table 1.

Table 1: Employability-enhancing pedagogical approaches that simultaneously develop subject knowledge and transferable skills.

Pedagogical Approach	Potential skill development outcomes
Group assessment tasks (e.g. reports or presentations)	Teamwork, communication, collaboration, leadership
Presenting to peers	Communication, presentation
Problem-based learning scenarios	Problem solving
Authentic assessments (e.g. industry reports)	Industry-appropriate written communication
Student autonomy (e.g. to define the specific focus of an assessment task)	Independent working and others dependent on the nature of the task (e.g. in an autonomous final-year dissertation students may develop risk management, project management, organisation skills etc.)

These pedagogies develop employability most effectively when students are supported to identify the additional skills they are developing. Making the skills explicit by highlighting them and including them in teaching materials is one approach, which can be further strengthened by requiring students to reflect on their development. This is discussed in more detail in Section 8.4.

8.3.2   Include opportunities for real-world insights in the curriculum

Inviting employers to contribute to the curriculum can provide students with valuable insights into the real-world application of their subject knowledge.

Guest lectures

A popular method of inviting employers to contribute to students' learning is to host industry professionals for a guest lecture. The academics in this research identified several benefits of industry guest lecturers:

"[guest lectures allow students to hear] things that are industrially relevant rather than us giving the abstract theoretical" (Academic).

"the students [get] an opportunity to hear an industrialist talk about their … company's work, identify the problems, the challenges that they have faced how they're overcoming it. But it allows them to learn things that they don't necessarily get [from us] … the industrialist will come with pictures of sites that you could never find in books because they're taking a photo from their [workplace] so it gives that, it allows people people's eyes to widen and if you like their creativity to be unravelled" (Academic).

As well as contributing to subject learning, guest lecturers can provide students with insights into potential careers:

"[guest lectures are] very interesting because the students get the opportunity to ask questions about that career path and the challenges they have experienced" (Academic).

Industry projects

Projects set by employers are another effective approach. Such projects expose students to industrially relevant problems and can provide an opportunity to use pedagogies that develop transferable skills. There were various approaches to incorporating industry-set projects. Some grouped students from a single programme whilst others were interdisciplinary projects grouping students from allied disciplines such as the various of engineering.

"Students can pick one [from a selection of] grand challenges, they work in a small group on a project and … feedback to employers. And that is an assessed module. [The employers] give that, sort of, employability perspective [on] making your project commercially viable … [and students get] feedback from employers" (Careers advisor).

"[Students] do a group project, which … takes place over a month and a half and they have to design a virtual research project … ending in some kind of benefit to society and it's assessed, and they have to produce some demonstrable project so it might just be a business plan or something like that. The students absolutely love that, they can be incredibly creative they're in groups of about 5 or 6 … and we also bring local businesses … to see the … assessment [which] is a presentation that the group gives" (Academic).

Some lecturers also gave examples of students completing a project set by an industrial partner for their final-year major research project.

When inviting employers to contribute to a programme, a popular approach recommended by careers advisors and discussed positively by employers is to approach alumni of the university from the same or allied programmes who are now working in relevant graduate roles.

8.3.3 Offer a variety of high-quality work experience opportunities

Work experience is valued highly by employers as it allows students to develop professional behaviours and personal attributes that are important in the workplace. Work experience can take several forms and offering a variety of opportunities has benefits for students and businesses.

Year in industry

A year in industry placement is a well-known approach to offering work experience and for those who can undertake a year-long placement they are beneficial for developing skills and gaining industry experience. Successful placements can often result in students being offered a graduate role at their placement company after their final year.

Placement opportunities can be oversubscribed meaning not all students who want to can find a placement. Additionally, a year in industry placement is not suitable for all students or businesses, for example:

- Small businesses who cannot afford to fund a year-long placement opportunity.
- Students who cannot find a local placement and have family or caring responsibilities that prevent them from taking a placement in a different region.
- Students who cannot afford or do not wish to fund tuition fees for an additional year.
- Students who wish to progress through their programme with the same cohort.

Internships

A short internship can be a good alternative, which small businesses may be more likely to accommodate financially and in terms of staff time. For example, one employer discussed not being able to fund or train a student on a year-long placement but stated:

"I could have someone for two weeks with a very defined piece of work to do, maybe desk research on a particular subset of industry or companies in that particular field of specialism. That's a doable thing for somebody on a very short-term placement". (Small business)

However, some students may not be able to participate in an internship. For example, students who are unable to give up a part-time job to take a 12-week internship.

Consultancy projects

For students who are unable to access placements or internships, work experience in the form of a consultancy project is another opportunity:

"it's called a professional consultancy project. [Students] work with a local employer … on a, usually on a specific project". (Academic)

However, some students may need support with this approach and the planning stage is important to ensure that the student and employer have the same understanding of the process and expected output:

these were undergrads … and some of those are pretty good and they did a consultancy project at [business name]. But I think what struck me about that … but I suppose you're going to get this in any cohort aren't you, but there were quite a few that needed to be spoon fed. [So that was] a cost of time [to the businesses]. But … the benefit for me is that if any of [the students] were interested in the future in working here at least I get to see how they performed. (Small business)

8.3.4 Integrate specific employability provision at the appropriate stage

Academics and careers advisors gave examples of good practice whereby specific employability provision was included in programmes often in partnership with the careers service. Engaging the careers service for this delivery, especially for subjects such as CV writing or structuring job applications is good practice because, as some academics highlighted, they may never have applied for a job outside of a university:

"for the most part all the staff members who have followed the academic path, you might have never applied for a 'real job', you know, and so then guiding on these things is really difficult". (Academic)

Importantly, this provision must be effectively planned, embedded and assessed. For example, one careers advisor discussed a skills module in which they provided some CV preparation guidance. The module was held in the second semester of students' second year. This was too late to help students apply for a third-year placement and perceived to be too early for graduation preparation:

> *"it's problematic that module I would say. it's not popular, the students hate it, it usually evaluates quite badly".* (Careers advisor)

This was echoed by a careers advisor at another university who stated:

> *"when things are not authentic and are a box-ticking exercise, students don't like it"* (Careers advisor)

8.4   Reflection

Employers, academics and careers advisors all suggested that students do not always recognise the skills and abilities they have learnt or developed during their degree programmes. This has also been shown in previous research [4].

Reflection has been highlighted as a valuable tool to help students to recognise their skills development [10, 13], which careers advisors in this research also recommended:

> *"the first stage really in [students'] career journey is to have that self-reflection and understanding of the skills that they've gained".* (Careers advisor)

Underpinning the recommendations made here with opportunities for students to reflect on their development will maximise the benefit for developing students' employability. Though as one academic highlighted, these reflections need to be integrated into a module or programme:

> *"I think [assessing self-development reflections] would add value. I think we just have to be clear about how we would do that. It [should] not a contrived add-on to a module which is just like and as well as doing this assessment you have to submit a form which is assessing your assessment of your development. You have to sort of really embed it into your criteria I think that sort of reflection".* (Academic)

8.5   Authentic, embedded and assessed programme-level provision

An important consideration in adopting any of the proposed approaches is that they are authentic, embedded into modules and planned at the programme level. This is important to enhance both the student experience and usefulness of the opportunities. This is also important for inclusivity, as not all students are able to engage with extra-curricular activities (e.g. those with caring responsibilities, those who need paid employment to support themselves at university).

Issues can arise when employability-enhancing opportunities are perceived to be an add-on activity and are not embedded into subject learning as students can think that:

> *"providing they score highly in their degree program then they are somehow guaranteed a graduate-level job"* (Careers Advisor).

This sort of belief leads some students to devalue the parts of their degree programme that are not assessed or explicitly linked to their subject-specific study. Therefore, ensuring that the use of the approaches suggested in this report are authentic, embedded and assessed increases the likelihood they will be useful and positively received.

Planning at a programme level is important to ensure that a diverse range of opportunities are provided throughout a programme. For example, asking students to give a presentation to their peers as an assessment, or preparation for an assessment, at least once in each year of a programme will allow students to apply feedback from previous presentations and develop their proficiency. Yet asking students to do this in most of their modules will likely be perceived negatively. Programme level planning also ensures that students encounter a variety of opportunities to develop a variety of skills. For instance, setting academic essay assessments in some modules and industry style reports in others will develop the different skills associated with these distinct tasks.

Importantly, this action plan does not suggest that all of students' learning and assessment should be framed in the context of moving into an industrial post as there will be some students who wish to pursue an academic career. Traditional methods of learning and assessment associated with academic study will both prepare students for an academic career and serve to develop the high-level skills, that are signatures of higher education and also valued by industrial employers.
This action plan suggests that providing the opportunities suggested as well as using more traditional methods of learning and assessment in higher education will prepare students for the widest range of careers.

8.6 Relationship management action plan to support programme delivery

Aligned with the four actions that can be used to design employability-enhancing programmes, four actions that support the effective delivery of such programmes were also identified through this research. These are summarised in Figure 7 and discussed in more detail below.
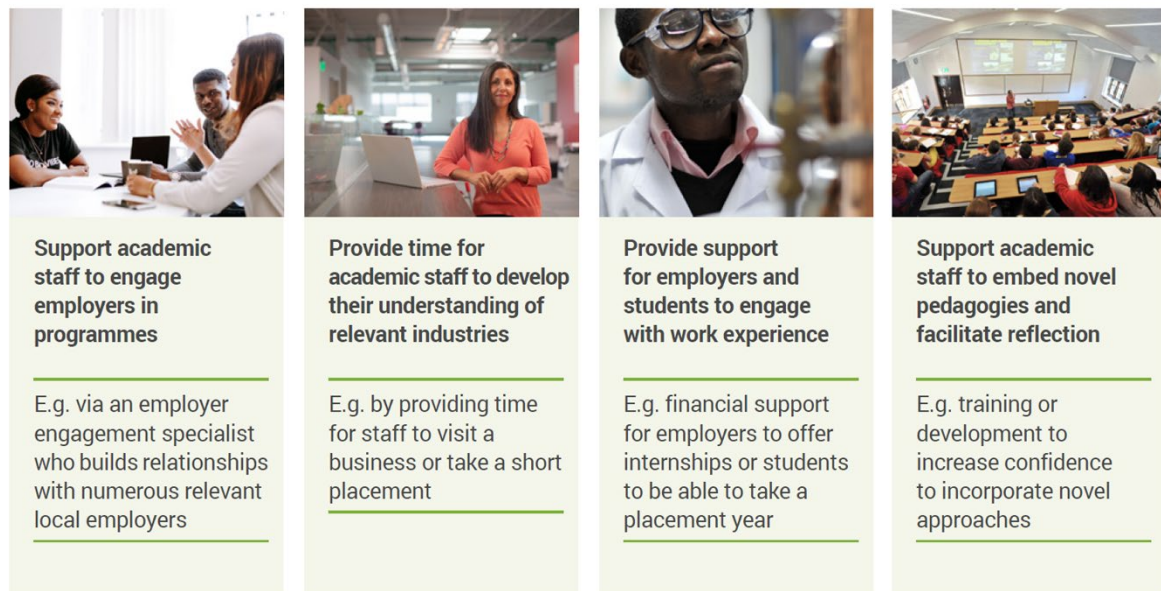
Support academic staff to engage employers in programmes

E.g. via an employer engagement specialist who builds relationships with numerous relevant local employers

Provide time for academic staff to develop their understanding of relevant industries

E.g. by providing time for staff to visit a business or take a short placement

Provide support for employers and students to engage with work experience

E.g. financial support for employers to offer internships or students to be able to take a placement year

Support academic staff to embed novel pedagogies and facilitate reflection

E.g. training or development to increase confidence to incorporate novel approaches

Figure 7: A Relationship management action plan highlighting support that maximises the employability-enhancing opportunities of programmes

8.6.1 Support academic staff to engage employers in programmes

A major barrier to engaging employers in programme delivery was that the staff who planned and delivered teaching did not have time to also engage with multiple employers if they did not have existing links. A potential solution to this barrier is to recruit a member of staff whose role is to act as a relationship manager and build and maintain industry links. For example, one academic spoke about a successful example where a member of the central careers team held responsibility for engaging employers to contribute to learning on behalf of a university faculty:

> *"the main thing is that it takes an awful lot of time to organise ... that's the major barrier. To an extent that's been mitigated in recent years because we have a very active ... [person] in the central careers department at the moment who takes it on as [their] role to do all of the service provision ... to boost interactions with potential employers".* (Academic)

This approach was also identified as a potential solution at a different university by an academic who highlighted how this would have benefits for a business as well as programmes:

> *"It would be an internal resource of people that are able to set up placements and to do the liaison with local industry … if you're going to do it seriously you need the institution to engage with people who have the time and are able to follow up talking to the potential employers, helping with all the [administrative tasks] … I don't think it's a particularly efficient use of academic time".* (Academic)

> *"if it's not organised centrally [employers] would get rather annoyed with lots of different departments asking for different things ... Whereas they would probably be quite keen to speak to the university and say 'well we're interested in five projects a year' and then somebody has to figure out how you divide those five projects between the demand within the university and then you get buy in from employers and something specific for the students to do".* (Academic)

8.6.2 Provide time for academic staff to develop their understanding of relevant industries

Academic staff who had not worked in industry stated that they sometimes felt unprepared to provide insights related to industry or the recruitment processes required for an industrial role. Those with industry experience felt that this was an asset when discussing employability with students.

> *"I can only seriously talk to them about how you get a job in academia because I've only ever seen getting a job in academia, I've only ever been involved in interviews for academic jobs … so I don't have external commercial experience … I know other programs [train students to design] their CV and stuff and again I'm not sure that in general an average academic is probably the best person to do that".* (Academic)

> *"a powerful thing for me is that I've got that industry experience so I'm not just an academic that's done a PhD that's not had any experience of the outside world so a lot of us that teach in [my discipline] have got some sort of industry experience, which I think is really crucial as well in helping employability and the students".* (Academic)

Where staff are motivated to do so, providing time for academic staff to engage with industry and develop an understanding of industry-relevant issues may help them to better support students in developing and recognising their employability. For example, the qualities employers are seeking, industrial priorities or applications of subject knowledge.

8.6.3 Provide support for employers and students to engage with work experience

Small and medium sized enterprises (SMEs) are the destination for large numbers of graduates, but some SMEs in this research did not offer work experience as the costs were too high. Costs included staff time, a short-term productivity loss and placement or intern salary.

An example of good practice that supports local small businesses to offer internships is to provide a subsidy that mitigates some of the risk associated with offering an internship and allows students or graduates to gain valuable work experience.

Students can also face financial barriers to undertaking work experience, which one university mitigated by providing a programme of small grants that students can apply for. Providing this approach can help some students undertake work experience who would otherwise not be able to:

> *"going on a placement sounds great, making money sounds great but relocation expenses, some of these require students to need to drive for the first time, having a car, so the university has a program of small grants that students can apply for and it's absolutely fantastic we had a student that won a £6,000 grant to buy a car because [their] year in industry would require the need for that level of transportation. … I think the majority are £1,000, but that can be an obstacle to getting students to engage in it that we tried to take off of the table".* (Academic)

8.6.4 Support academic staff to embed novel pedagogies and facilitate reflection

Some academics are reluctant to incorporate approaches to develop employability in subject learning for various reasons including:

- A fear it will dilute the academic integrity of their teaching[9, 14]
- Doing so would involve a significant workload increase[9]
- Not feeling appropriately qualified or prepared[9, 10]

However, employment outcomes are valuable for universities as they are used in the calculation of league table positions and many institutions use their employment outcomes to market their programmes.

This report does not suggest that employability content should be included at the expense of subject content. Rather, that subject content could be delivered in a way that develops employability-enhancing qualities alongside subject outcomes. Doing this may involve additional work and the use of approaches that are new to academic staff. The provision of time, mentorship and/or training as appropriate for academic staff would therefore support the adoption of employability-enhancing pedagogies.

9   Conclusion

The research that informed this report showed that collaboration between employers and universities can provide mutually beneficial opportunities to enhance graduate employability. The participating regional bioeconomy employers identified several areas of transferable skills and professional awareness where graduates did not always meet their expectations but were largely satisfied with graduates' knowledge and technical skills. Interviewees collectively identified approaches that universities use that can enhance graduate employability. However, the effectiveness of these could be increased with additional institutional support and industry involvement. Well-planned collaborative opportunities can benefit both students and the businesses that contribute.

Based on the research findings this report presented three action plans:
   - Bioeconomy Businesses' Graduate Employability Action Plan
   - Curriculum Design Action Plan to maximise graduate employability
   - Relationship Management Action Plan to support programme delivery

It is likely that adopting the business action plan in full would not be practical for many employers and this is not the intention of the plan. Rather, that employers ensure that any engagement is in keeping with their business aims and capacity and that universities should offer a diversity of opportunities that allow the widest range of employers to participate. Adopting the plans in this way will introduce students to numerous potential career opportunities.

Implementing the recommendations in these action plans will maximise graduate employability and support positive employment outcomes with benefits for graduates, universities and bioeconomy employers.

10 Acknowledgements

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