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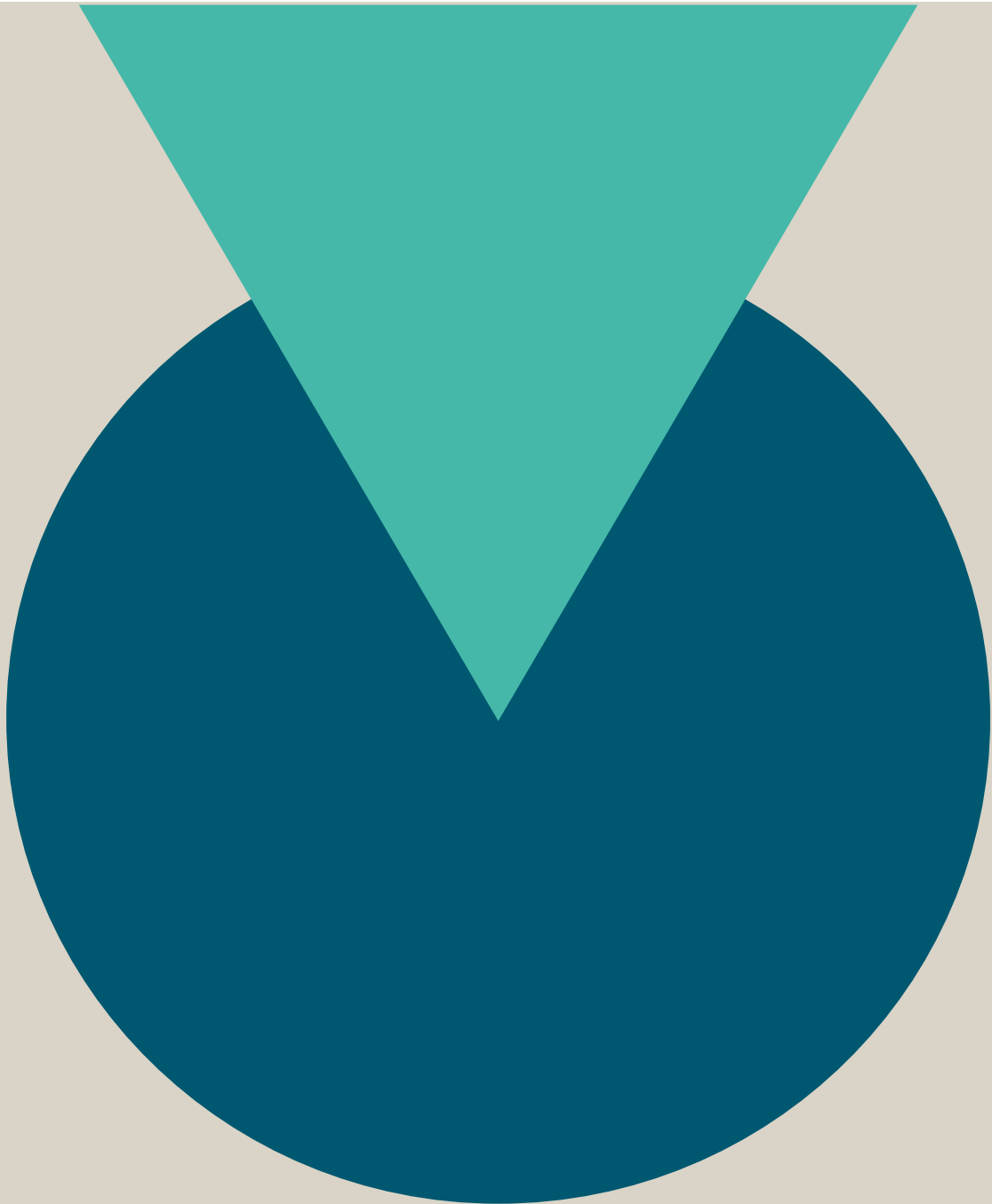
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Lighting the Labyrinth: enhancing student success through the 3Es

Edited by: **Stuart Norton, Michelle Phillips and Iwi Ugiagbe-Green**



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Introduction

Stuart Norton, Michelle Phillips and Iwi Ugiagbe-Green

Navigating the labyrinth of how to support students in the development of enterprise, entrepreneurship and employability skills is not an easy task for any higher education institution. However, this navigation has become easier over the last ten years or so, as these '3Es' have been recognised as important parts of higher education degree programmes. We can all help to light the way for one another through this maze by sharing practice, and by continuing to strive for innovation and the embedding of new ideas in our institutions. Complex as this labyrinth is, there is a way through it.

In this series, the fifth publication linked to the Advance HE Employability Symposia, we bring together over twenty examples of sector practice regarding the 3Es. The series continues to outline some of the ways in which institutions have undertaken the necessary navigation of these critical and multifaceted areas. What works, and how do we know it works, in terms of higher education equipping graduates with the skills they need to enter and drive forward the workforce? What is our sector putting in place to enable us to do this better, and in as informed and effective a way as possible? Moreover, this publication seeks to consider and suggest ideas and future developments for all of us working in higher education, to continue to improve how we enhance the success of our students through enterprise, entrepreneurship and employability education. What might we be getting wrong, or missing entirely? What might the future careers landscape look like for our graduates, and how might, for example, artificial intelligence (AI) change this, and in what ways? How can our own institutional systems and processes be developed to support our students as best as possible, to slingshot them into roles as our future workforce and leaders?

It is apparent that improving the chances of graduates finding employment, creating their own ventures, progressing to post graduate study – indeed any of the myriad of chosen future trajectories – is critically important. The evidence shows that graduates benefit from the development and support that the 3Es bring and therefore enhancing this activity, to enable their individual success is at the core of what we strive to do, whether that is from an academic or professional service perspective.

While employability per se can remain a contested topic, the growth in developments highlights the significance and importance that is increasingly given to the matter. At a governmental level it is seen as supporting economic growth. Venture creation is actively encouraged, and a highly skilled workforce is essential for a thriving economy, as the more employable graduates are, the better equipped they are to contribute to economic growth and innovation. Furthermore, employability activities can promote social mobility, for example by improving access to experiences linked to career interests and helping students from lower socio-economic backgrounds to participate in activities such as educational exchanges or take up internship opportunities. The 3Es can help people from socially disadvantaged backgrounds to access better jobs and improve their life chances.

There are several internal and external drivers that are shaping the focus on employability in HE. For example, pressure from employers results in increasing demands for graduates that have the skills and knowledge they need to succeed in the workplace. The global economy is also creating new opportunities for graduates; we need to prepare them for evolving complex scenarios and environments that we do not necessarily know will look like at the point of graduation. This evolving world is also making it more difficult for graduates to find jobs, emphasising the need to support all students and consider the 3Es through a variety of thematic lenses. Coupled with rapid technological change, we are seeing the need for graduates to be constantly learning and adapting. The growth in AI is exponential and will see many impacts in terms of HE, including how and when we support students with employability aspects such as career development learning and the critical factors associated with this. We also cannot ignore the rise of the gig economy, with more and more people working in temporary or freelance roles. This also requires a different set of skills and knowledge than traditional employment and has a specific nod to the areas of enterprise and entrepreneurship, in particular within the creative arts.

While this series adds to the wealth of knowledge in this area, there are a number of challenges that remain in order to improve employability in HE:

- + Better alignment of the curriculum with industry needs: It is difficult to keep the curriculum up to date with the ever-changing needs of employers – AI is one clear example of this.
- + Developing skills: skills, such as communication and teamwork, are often more difficult to teach than technical skills, how do we ensure the assessment gives weighting and context to these areas?
- + Creating opportunities for practical experience: Students need to have opportunities to apply their knowledge in real-world settings but placements, while critical, are not a panacea – how do we ensure learning from a range of work integrated learning opportunities and that none of these sit in isolation to the rest of the learning? Furthermore, how do we provide these opportunities to all students in a scalable way?
- + The digital divide: Not all students have access to the technology and resources they need to succeed in HE, through different operating systems to unstable access to the Internet.
- + The social mobility gap: Students from socially disadvantaged backgrounds are less likely to be able to participate in activities that are not truly embedded or carry additional or hidden costs.

Entrepreneurship, enterprise and employability, and the teaching of related skills, have become a core part of what is seen as important provision in higher education, and research has given important insights to these core areas of provision. For example, the journal *Studies in Higher Education*, a high impact journal in the sector (impact factor 2022: 4.2), included 14 articles during 2023 which mentioned one of these three words in its title. This represents just under 10% of the 144 articles published during the year, and this is without counting other associated terms, such as careers, innovation and industry placements. Moreover, training in skills such as entrepreneurship is no longer

mainly delivered by university business and management schools, for example, the Times Higher Education award for ‘Outstanding Entrepreneurial University’ 2023 was given to the Royal Northern College of Music, a small specialist music conservatoire where most musicians go on to freelance careers, effectively running their own small businesses, hence enterprise skills, alongside core entrepreneurship components such as project management, tax, negotiation and others, being essential.

Frameworks, models and theories on how to embed these 3Es into degree programmes continue to provide support for course leaders – for example, the EntreComp framework (Bacigalupo et al., 2016), the Professional Standards Framework (Advance HE, 2019), and the detail provided by the QAA guidance (QAA, 2018) on the topic – and organisations including Enterprise Educators UK (EEUK), the Institute for Small Business and Entrepreneurship (ISBE), and the National Centre for Entrepreneurship in Education continue to support the professional development of educators, provide membership communities, and offer chances to share research and grow networks. Overall, the 3Es community of educators is a very lively and rich one, which seeks to advance knowledge of new methods of teaching (e.g., gamification, see Jamel et al., 2023) and to contribute to the development of innovation to support achievement of sustainable development goals, such as sustainability (see e.g., Reid & Petocz, 2021).

This collection aims to build on existing scholarship, frameworks, tools, models, and examples of best practice and to showcase and discuss initiatives currently being tested across the HE sector, in a variety of institutions and disciplines. What is apparent across the series is that in today’s landscape, passively imparting employability skills and attributes alone is insufficient; instead, empowering students to cultivate their own distinctive graduate identity is paramount. This necessitates active learning experiences and authentic assessment methods that encourage students to take ownership of their learning journey and develop a personal responsibility for their employability. This series highlights how transforming students from passive recipients of knowledge into active participants in their education can harness the necessary components of the 3 Es, in particular critical thinking, problem-solving, and collaborative learning. This self-awareness and sense of purpose are essential for the 3Es, as they equip students to identify and pursue their aspirations.

Although we have presented the cases under the broad banners of Multidisciplinary, Sustainability, Authentic Assessment, Work Integrated Learning and Enterprise Education, we want to be mindful that we could have categorised these initiatives under a number of different labels. There are a range of diverse approaches presented, often with overlapping threads that transcend these boundaries. What truly unites them is a shared purpose: a drive to illuminate solutions within the labyrinth of “wicked problems” that challenge our sector across the 3Es.

While labels and categories may offer a semblance of order, it is the unifying spirit of tackling “lighting the labyrinth” that truly defines the essence of these initiatives. We present a range of dynamic journeys. Examples include interdisciplinary collaboration and innovative thinking, threshold concepts, and wholesale approaches in specific disciplines to name but a few. While each initiative is unique in its focus, together the series echoes the collective pursuit of transformative solutions that

address the intricate, interconnected, and often resistant challenges we face. Therefore, each strand, whether focused on enterprise, multidisciplinary collaboration, subject-specific innovation, sustainability or work integrated learning, contributes to the overall strength and resilience of the fabric of the 3Es. The beauty lies in the interplay between these threads, where the sum becomes far greater than its individual parts.

Conclusion – common themes, intended impact of this collection

This series highlights just some of the fabulous work undertaken across HEIs. In today's dynamic and competitive world, whether in employment or through various trajectories post-graduation, graduates need more than just academic knowledge to thrive. They require a comprehensive skillset that encompasses both technical expertise and key employability qualities. Moreover, graduates must be supported in generating ideas which lead to multiple kinds of value – not merely financial, but value in its broadest sense in terms of the way in which graduates have an impact on the world, for example, social, cultural and scientific value, and also value which improves health and wellbeing, inclusion and access, and diversity and representation. To ensure that HEIs are equipped to produce highly employable graduates, we must foster a culture of employability that permeates every aspect of the educational experience.

We wish to end with a provocation, a call to action, a challenge – How can we, the sector, work more collaboratively to address these perennial issues? We call for discipline advocates to champion the work within and beyond your institution and urge you to replicate and test many of the fabulous examples that have been shared in this series and beyond and share what works – and just as importantly, what doesn't. Employability is not a destination; it's an ongoing journey of continuous learning, adaptation, and growth. By working together, educators, students, and HEIs can create a supportive ecosystem that empowers graduates to thrive in an ever-changing world. The future of our graduates and our society depends on it.

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Authentic assessment

Preparing our students for the world of work through the way we assess them

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Background

One of the challenges that higher education (HE) is facing is that the current job market and landscape is more competitive than ever before and evolves rapidly (Olakova et al, 2023). For many disciplines, including our own BSc Psychology students (the focus of this case study), many of our graduates do not go into psychology-specific graduate jobs. Instead, they pursue a very broad range of job industries, each requiring different specific knowledge but an overarching skill set (HESA, nd; AGCAS editors, 2023). It is important that we as educators prepare our students for this job market, which is challenging, changing and diverse in the current landscape of Industrial Revolution 5.0 (Olakova et al, 2023).

One way of preparing our students is to ensure authenticity is embedded within our programmes (Ahford-Rowe, Herrington and Brown, 2021; Miller and Konstantinou, 2022). Given that authenticity is a concept that is often quite nebulous, it is important to clarify what we mean by authenticity. For us, authenticity is not about testing recall but the development of knowledge and skills that students can apply to other tasks and situations. This is very similar to how Ajjawi et al (2023) view authenticity in assessments. This can be split into two components: Teaching and Assessments. When it comes to authenticity in teaching, this may be going beyond theories, using real-life scenarios or case studies, and discussing these with the students rather than just speaking at them. This builds on the research of Chadha (2022), highlighting the importance of being innovative and experimental. It is almost like turning the classroom into a workplace setting where students need to apply the knowledge they are learning. With regard to assessments, an authentic assessment would require students to use the same competencies, or combinations of knowledge, skills and attitudes they would need to apply in the criterion situation in professional life (Gulikers, Bastiaens and Kirschner, 2004).

Authenticity in teaching and learning is important because we want our students to be prepared for the world of work. Only a few students go into academia and research, the majority follow a very diverse set of career paths and directions (HESA, nd; AGCAS editors, 2023). Given that today's graduates have everything at their disposal – the internet, ChatGPT and other similar tools – it is important to know what to do with that knowledge and how to apply it to your workplace setting. Questions such as “is this information reliable or relevant?”, “How does information A compare with information B?”, “How can I implement this information?”, “What is my next step?”. We believe authenticity plays an important role here.

Therefore, our research question is: How can we incorporate elements of authenticity into our teaching and learning provision to ensure our students have the right skills, knowledge and experience to best prepare them for the ever-changing graduate workplace and the variety of jobs students go into? The framework we are basing our research on is the five-dimensional framework for authentic assessment by Gulikers et al (2004). The five dimensions are:

- 1 **Assessment task:** this is the activity that is being carried out by the students (ie what they are producing). A more authentic assessment task will require students to perform activities more similar to those they would carry out in professional practice. This includes integrating knowledge, skills and attitudes, task complexity and students' ownership about the different elements of the task.
- 2 **Physical context:** an assessment in which the knowledge, skills and attitudes used in professional practice are well reflected. This includes fidelity (ie how closely a simulation imitates reality), the number and kinds of resources available, and the time available.
- 3 **Social context:** this relates to the social interactivity in the assessment and how these resemble the level of interactivity (or not) of the real-world task. Here, we can distinguish between collaborative tasks (ie what are you as an individual accountable for; how does your work depend on the work of others and vice versa, and how do you work together) and individual tasks.
- 4 **Assessment result or form:** this is the actual output of the assessment (ie the product), which is independent of the process of producing the assessment. An authentic assessment result includes an output similar to that which one would be asked to produce in real-life, allows a marker to assess the competencies of the student, assesses the full range of tasks that would be required in the real world and includes an element of presenting to other people in oral or written form.
- 5 **Assessment criteria:** these are the areas the students will be assessed on. Authentic assessment criteria are set beforehand and are made explicit to the students and include assessing the professional competencies based on the real-life situation. We are using this framework to assess the level of authenticity in the teaching and assessment in our programme and to develop an easy-to-use scale that others can use.

Approach

We used this framework to review the authenticity of the assessments, taking a programme-level approach. This meant reviewing each assessment element in the BSc Psychology programme and reviewing its authenticity. We also acknowledge that not every assessment needs to be “100%” authentic. Our approach was to create the right balance for our cohorts to ensure they develop a broad range of transferable skills while considering what the most appropriate method of assessment was for that particular module. Some examples of current authentic assessments in our programme include the following.

Year 1

- + Job interview where students pick one job out of six (actual placement jobs that they can apply for outside of the assessment), submit their CV for the chosen job and attend an in-person interview with two members of staff. Here, they present themselves, why they applied for the job, and why they are the right candidate. This is followed by a Q&A from the panel.
- + Written reflection: students write a written reflection on the development of their academic and employability skills. They also need to reflect on how they see themselves, and where further development opportunities are.
- + Lab report 2: besides writing a lab report about a study, they also need to include a section on how they have incorporated the feedback they received on lab report 1. In this way, students will firstly have to review the feedback they receive, and then act on it.

Year 2

- + Poster: students have to choose one article out of three and present this article in poster format as if they were going to present this article at a conference. The importance of being concise and including visual elements is emphasised. Furthermore, they need to provide a critique on the article and suggest a future study (beyond what the authors provide in the article) to enhance their critical thinking skills.
- + Qualitative report on an interview study: students conduct a short qualitative interview study in groups where they develop their own interview schedule and collect data as a group by interviewing each other in round-robin format. After transcribing the interviews, each student individually analyses the dataset of three interviews by using thematic analysis and writes this up in a report. As part of this, students are also required to perform a reflexive analysis (reflect on how they as the researcher have potentially influenced different stages of the research process and their position in relation to the research). In this assessment, students conduct a qualitative research project from start to finish and will understand each aspect of qualitative research.
- + Oral presentation and evidence file: for placement students, they will have to deliver an oral presentation describing what their placement entailed and reflect on what they have learned from this experience.

Year 3

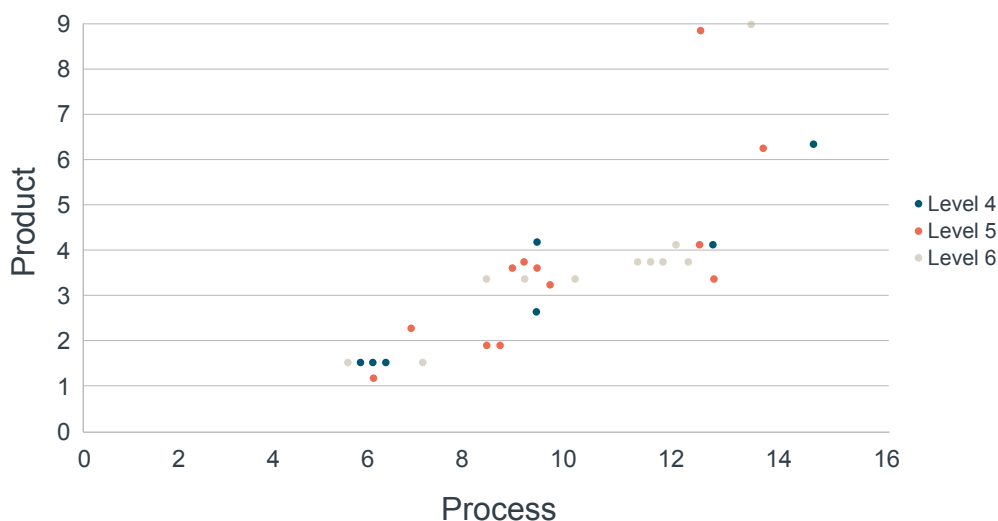
- + Writing a report for a stakeholder organisation: students are required to critically analyse academic papers and use this to write a funding application for a stakeholder organisation.
- + Being a forensic psychologist: students have to conduct a risk assessment from a case file using a validated clinical tool and develop a treatment plan.

Using Gulikers et al (2004), we developed a simple scale to measure the authenticity of an assessment using a programme-level approach. The scale is also not specific to any type of programme but can be used for any type of degree. Psychology is part of the Department of Life Sciences and, across this department, we piloted the scale in two ways (after receiving ethics approval): 1) we used the scale to assess the authenticity in our programme and others across the department (for comparison), and 2) we held interviews with colleagues in the department who had not used the scale to determine how easy the items were to understand and if they were interpreted in the same way by multiple people to ensure consistency.

Outcomes

To more easily visualise the data, we condensed the scale to two dimensions: product (the output produced) and process (the steps taken to produce the output). Using this to review our assessments, while we had a good baseline of authenticity, we identified a cluster of assessments that were very traditional (eg academic essays comparing theories and frameworks using empirical evidence), particularly in Level 6 (year 3) (Figure 1).

Figure 1. Authenticity of our assessments visualised in product and process dimensions



We worked with colleagues to develop new assessments with more elements of authenticity, which will be implemented in 2023-24 or 2024-25. Here are some examples:

Year 1

- + A visual presentation: students are required to combine the knowledge they gained about brain anatomy and cognition to create a visual presentation (eg infographic, TikTok-style video, gif).

Year 2

- + Poster presentation: building from the poster assessment, students will now also be required to present this poster in person to a member of staff and a group of their peers followed by questions.

Year 3

- + Dyslexia assessment: using the knowledge they gained in the module, students will be provided with a case study, and they must assess what is happening with the patient and develop a treatment plan.

We have re-evaluated the assessments and all tweaks have led to an increase in authenticity. At programme level, this has enhanced the diversity of assessments our students will receive this academic year, and the skills that they will develop. The impact of this will be tested by comparing grades from this academic year to previous years and by exploring students' views on their assessments and skills development using surveys and focus groups. Based on the pilot of the scale design, we have fine-tuned the statements and tested them again for consistency and understanding. We are currently rolling it out across the department and more widely across the University for students and staff to complete for each assessment they are involved in. This will enable us to test the reliability of the scale and its ability to map out programme-level authenticity in diverse programmes across the HE spectrum.

To conclude, embedding authenticity in the programme is key for students' development of transferable skills that are needed in the workplace. In this case study, we focused on the assessment element of authenticity and showcased how we further embed authenticity in our assessments. Our approach has been that not every assessment has to be 100% authentic and that authenticity is not just an oral presentation. We believe that building assessments with elements applicable to a real-world setting is crucial for developing diversity in the assessment types across the programme and the skills our students develop.

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Integrating authentic assessment in Science and Engineering using a programme-level approach

Maria Romero-Gonzalez, School of Engineering and Materials Science, Queen Mary University of London

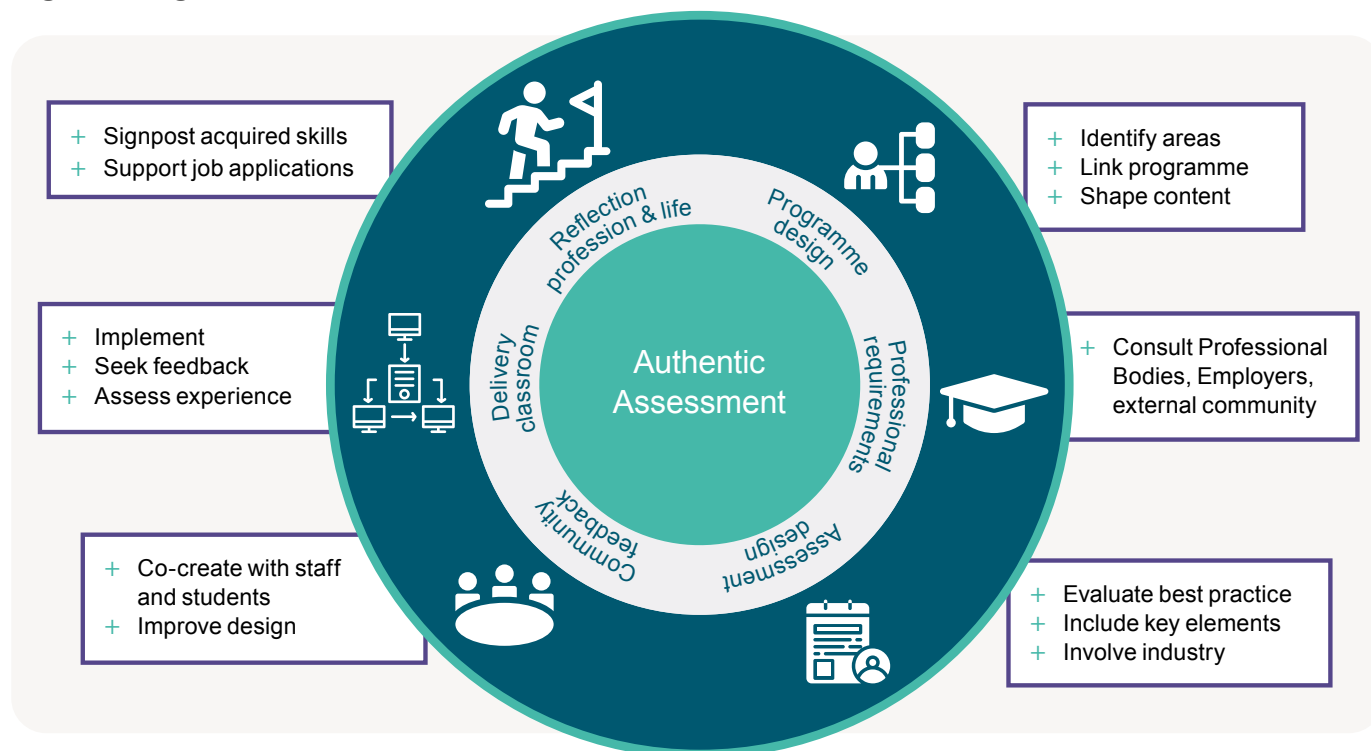
Background

Authentic assessment can have a profound impact on a student's learning since the principal objective of its use in Science and Engineering curricula is to connect core knowledge with practical applications. Examples from the literature in the use of authentic assessment mainly use the definition which states that authentic assessment provides opportunities for learners to demonstrate the use of knowledge in a meaningful and integrated way in tasks that are similar to those they will undertake as a professional, providing unique experience that prepares learners for the future. This is well documented in Ashford-Rowe et al (2014), Sambell et al (2013) and Villarroel et al (2018).

In this study, I propose a framework for embedding authentic assessment in the curriculum using a programme-level approach. This methodology uses authentic assessment as a tool for preparing learners for the use of knowledge in the immediate future as they acquire skills that will support them in the long term in future jobs that do not yet exist. McArthur (2023) suggests that educators focus on the use of authentic assessment that demonstrates a social and economic value to situate the learner as a member of society. Therefore, the central challenge is to design authentic assessment that shifts the learner thinking from conventional approaches to ensure transformative change in society. The framework presented here fulfils this idea by linking learning through authentic assessment at curriculum levels, increasing complexity as the learner progresses. The case study demonstrates the impact that a framework for curriculum design based on the use of authentic assessment has on learners as graduates.

Figure 1 shows the steps required to embed authentic assessment in the curriculum using a programme-level approach (Elkington, 2020). The framework has been constructed centred around authentic assessment as it links the world 'out there' with essential knowledge. Through community feedback and reflection, authentic assessment can be used to explore possibilities of what the future could be. This requires an examination of the programme as a whole and integration within and between learning levels using a constructivist model. Designing authentic assessment also involves constant review and feedback to ensure that the activities remain relevant and pertinent to knowledge and the changing world.

Figure 1. Framework for designing authentic assessment in Science and Engineering curriculum



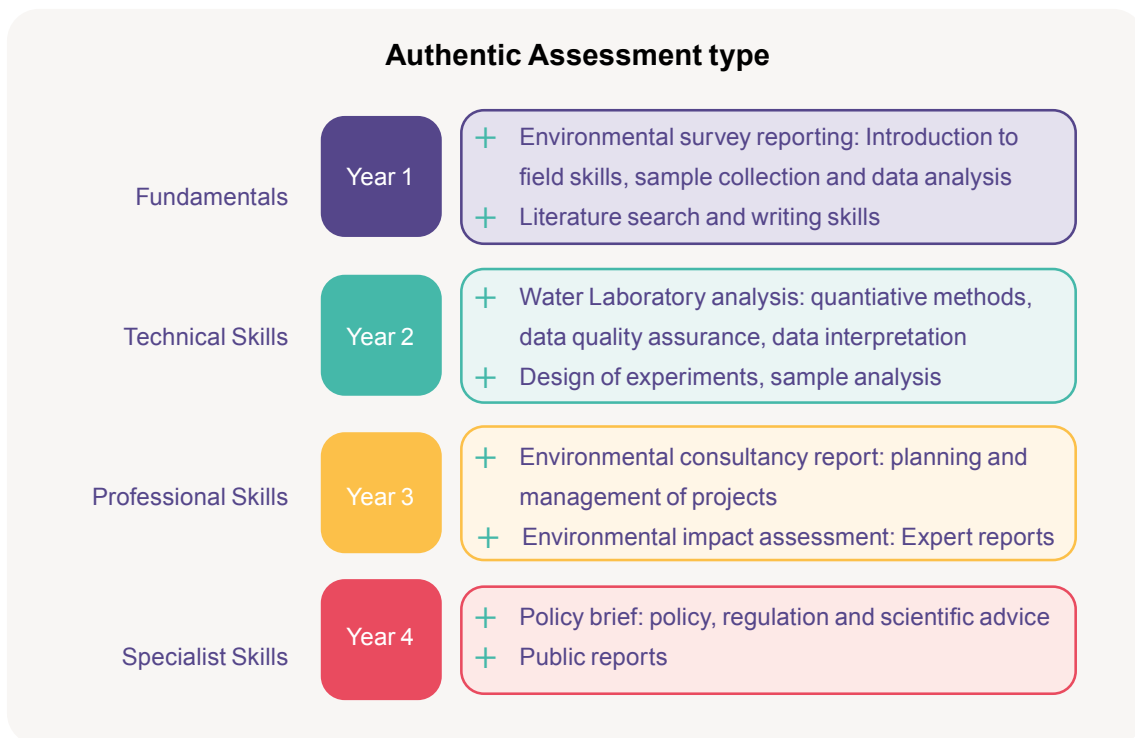
O'Connor (2022) argues that the way constructivist ideas in higher education (HE) are used in designing the curriculum neglects the importance of disciplinary differences, limiting the interpretation of the requirements of constructivist education. They also highlight the importance of connecting constructivism and active learning to knowledge and purpose, avoiding falling into the trap of using active learning as busyness rather than substance. These are important issues to consider and I address them by proposing embedding authentic assessment in partnership with essential stakeholders (learners, professional bodies, industry), thus considering not only the professional skills but also the ethical and social values of individuals and their view of work, wellbeing and society. In doing so, the framework can be implemented across disciplines.

Approach

The framework presented here has been implemented in the Environmental Science Programme at the University of Sheffield from 2018, and nine Engineering programmes at Queen Mary University of London from 2021. As the implementation requires feedback for improvement and maturity, I describe here a case study from the Environmental Science programme, as it has been delivered in this format for the past four years. The first graduates from this programme exited in 2021 and I have followed the professional life of four learners to assess the graduate outcomes. Figure 2 shows the authentic assessment elements used, linked to programme level and skills. The design included consultation

with learners, the Institute of Environmental Science (IES), the Environment Agency and a number of professional practitioners in local, national and international companies. The results from this part of the study have been previously published (Romero-Gonzalez, 2021). I also invited collaborators to deliver and assess the outputs to provide the external perspective from the world of work.

Figure 2. Programme-level approach for embedding skills in Environmental Sciences



For the assessment in Year 1, learners were supported by Moors for the Future and the Peak District National Park Rangers. In Year 2, students received knowledge and feedback on their performance from a local chemical analysis laboratory. In Year 3, learners worked in partnership with staff from the National Coal Mining Museum for England and in Year 4 worked in collaboration with the Health and Safety Executive. In all cases, the assessment outputs were submitted to the University and evaluated with external colleagues from the aforementioned institutions. The authentic assessment was designed using the intended programme learning outcomes at each level and learners worked in teams when required, as they would in a professional environment. For example, for the assessment in Year 3, learners were assigned roles to deliver a project where they had to act as field assessors or laboratory analysts, allowing them to develop skills that were more suited to their personal interests.

I conducted semi-structured interviews and collected feedback from learners to improve the model. I also requested feedback from the institutions consulted, focusing on the benefits from their contribution. Learners also received advice and support in preparing for future job searches and were encouraged to maintain a professional presence using LinkedIn. This platform was then used to keep

contact with the learners after graduation and to follow up their professional development as they entered the job market. I asked the graduates one question approximately six months after graduation and as soon as they were recruited into their first job: *What has been the influence of authentic assessment in your professional development?* The impact of the framework design was also evaluated by looking at how learners use their LinkedIn personal profile in spring of 2023 (one or two years after graduation) to describe their professional status and their brand as recommended by LinkedIn (2023).

Outcomes

The design and implementation of assessment using a programme-level approach showed that it is necessary to closely monitor the activities and experiences of learners to ensure that assessment purpose, social context and activities remain linked (Sokhanvar, 2021). For example, the assessment in Year 1 requires learners to apply fundamental technical skills in assessing the quality of environment at the Peak District National Park. Learners were working in collaboration with Park Rangers and volunteer members of the public, which contributes to internalising the importance of environmental assessment for the protection of a natural space that is beneficial to society. Feedback from learners highlighted the importance of signposting their contributions and the impact of their work, demonstrating the aspiration to transcend from focusing only on the task to understanding the value of the task. The impact of this approach was also evident from the responses of the institutions involved in the study. Feedback comments included 'highly satisfied with the professional behaviour of the learners'; 'impressed with the high quality of the work submitted and the findings presented'; 'find valuable the assessment performed by the learners in the day to day management of the water quality treatment'.

The value of the approach used here has been clear in the impact on learners in professional life. Of the four graduates that were followed after graduation, three graduates secured jobs in the environmental sector within six months of graduation and one student obtained employment in the sector eight months after graduation. All graduates responded through LinkedIn to the question *'what has been the influence of authentic assessment in your professional development?'* The responses included 'I used the assessment in Year 2 during my interview to explain my expertise in sample analysis and data analysis'; 'the best example I could give in my CV was the consultancy report from third year'; 'I used the keywords of skills from the assessment in the programme in my CV'; 'I still remember our first year report in the Peak District field trip, it was so comprehensive and gave me so much to include in my job applications'. This shows that activities and experiences acquired through authentic assessment provided a springboard for learners to market themselves as professional graduates.

The feedback from participants after one year of employment demonstrated that the experience obtained were long lasting: 'I can't believe that I am doing a similar job to what we did in our second year lab class'; 'I realised that I am well prepared to talk to the community in a project I'm working from the practice we had at University'; 'all the hours learning sampling in the rain were worth it'.

The effect of authentic assessment was also evident from the professional profiles the graduates use in their LinkedIn platform. Table 1 shows a summary of the profiles publicly available from the graduates. It is clear from the wording used that they are able to balance a range of knowledge keywords with skills that were developed during their studies. One graduate uses the phrase ‘my degree in Environmental Science’ demonstrating the impact that the programme design and use of authentic assessment had in their professional career.

Table 1. Extracts from graduate professional internet profiles

Student no	LinkedIn About section in profile one year after graduation
1	MEnvSci Environmental Science graduate with extensive fieldwork and laboratory experience ... vegetation dynamics and soil and water indices, community engagement and outreach
2	Environmental Science graduate who is enthusiastic about sustainability. My degree in environmental science has developed ... a range of skills in designing projects, collecting data, presenting findings and writing professional reports
3	Highly motivated Environmental Science graduate who enjoys encouraging others to participate in activities that use environment sustainably
4	Accomplished Environmental Scientist with a passion for delivering ... insight through analytical methods, data collection, processing and analysis. Leading cultural and disciplinary teams ...

This case study showed that the experience of authentic assessment helped learners to visualise future careers that enrich their lives, role in society and sense of purpose. As demonstrated here, there is a need for designing assessment from a programme perspective to minimise tensions between knowledge, skills and curriculum structures. The impact of taking a community approach to designing and implementing the assessment can lead to building relationships with learners that last a lifetime.

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From a blank piece of paper to a compelling employability narrative: student-designed authentic assessment for creating socially responsible, employable graduates

Andrea Todd, University of Chester

Background

Against a backdrop of increasing focus on graduate employability and employment outcomes (Bathmaker, 2021) and increasing investment in widening participation programmes (Hutchinson, Reader and Akhal, 2020), this case study considers how taking a student-led approach to module development has enabled students to develop a compelling employability narrative (Tomlinson, 2017; Tomlinson and Anderson, 2021), to better understand social responsibility and confidently articulate their skills for work.

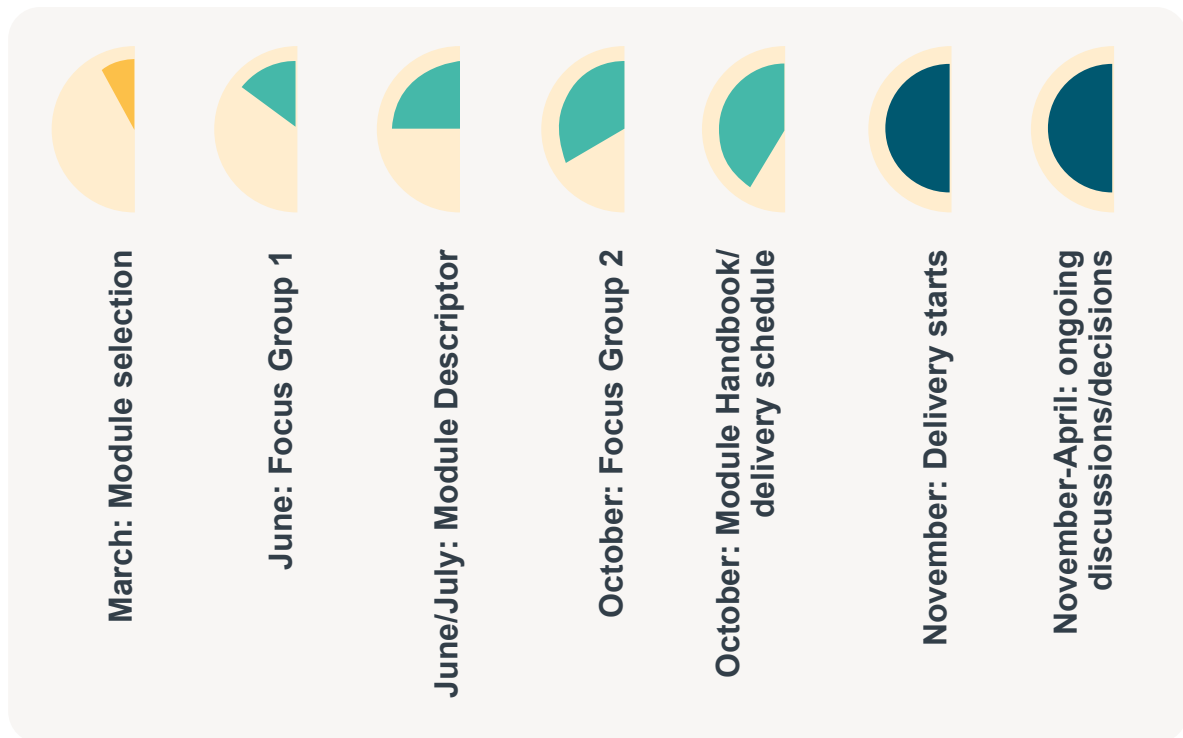
During 2022, I was tasked with creating a new level 6 module for Law students participating in pro bono (free legal advice and guidance) projects. Many pro bono-related modules across the sector teach students the skills required in a legal advice clinic setting, such as interviewing clients, drafting letters and undertaking research. However, this material is already covered by existing modules. The challenge was therefore to build a module that would provide something different – and, crucially, useful – to students on the cusp of entering the world of work.

In approaching the module build, I was influenced by the concept of student voice as a movement to democratise the educational process (Fielding, 2015). By engaging with students as collaborative partners (Cook-Sather, Bovill and Felten, 2014), I sought to encourage students to be ‘authors of their own destiny’ (Gravett, Kinchin and Winstone, 2020, p2584), shifting from passive recipients to active agents (Bovill et al, 2016). This also necessitated me changing my role from that of ‘expert’ to ‘facilitator’ (Bovill et al, 2016). In short, I needed to trust that the students knew best what would be of real value to them and play my part by facilitating their wishes within the constraints of institutional processes.

Approach

Six students (from a cohort of approximately 100) applied to join the pilot of this optional module, which was due to be delivered between November 2022 and April 2023. The six students attended two ethically approved focus groups (in June 2022 and October 2022) to discuss learning outcomes, assessment methods and module content, and further discussions and final decisions around assessment and delivery continued as the year progressed.

Figure 1. Timeline of module creation



When asked what the module would ideally look like from their perspective, students were clear that they wished to engage in a practically focused module that helped them:

- + understand the context of the pro bono legal work they were doing
- + appreciate what would be expected of them in junior legal roles
- + articulate their skills in order to secure a graduate role.

Students were also clear that they wanted the module's assessment methods to be of value to them beyond the university context.

Figure 2. Student contributions to new module discussions, Focus Group 1

IDEAL MODULE APPROACH	POTENTIAL LEARNING OUTCOMES	POTENTIAL LEARNING OUTCOMES
'Hands on' 'Practice not theory'	'Understanding where it (the need for pro bono legal help) all comes from' 'Understand and evaluate the real world practicalities of life in practice' 'Understand and develop skills (needed by law)' 'Reflect and take what you already know about yourself and translate that onto paper' 'Understanding how to do well in interview'	'Any way that isn't an essay' 'Being assessed using something that's actually going to help inform my practice'

2.1 Learning outcomes

The students devised four learning outcomes for the module, summarised below:

- 1 Evaluate the role of pro bono initiatives in today's legal landscape.
- 2 Identify and analyse the key skills required for successful participation in pro bono initiatives ('pro bono skills') and for life as a practising lawyer.
- 3 Reflect on how pro bono skills have developed through involvement in pro bono initiatives.
- 4 Examine and articulate how the pro bono skills developed translate to the work of junior lawyers in practice.

2.2 Structure

Students decided to split the module into two parts. They identified two assessment methods they felt would push them outside their comfort zones and would provide valuable preparation, and practise, for the tasks they identified as being necessary to secure, and succeed in, a legal role.

PART ONE			PART TWO		
Focus	Assessment	Weighting	Focus	Assessment	Weighting
Pro bono in the wider legal landscape (LO1)	Presentation	30%	Identifying, practicing and articulating real-world skills (LOs 2-4)	Mock interview	70%

2.3 Content

Part One consisted of two workshops and required students to research why citizens need recourse to pro bono advice, and why students, universities and practicing lawyers should participate in pro bono work, as well as researching proposals to plug the gap left by Legal Aid cuts in England and Wales and devising innovative ways in which pro bono services could be delivered.

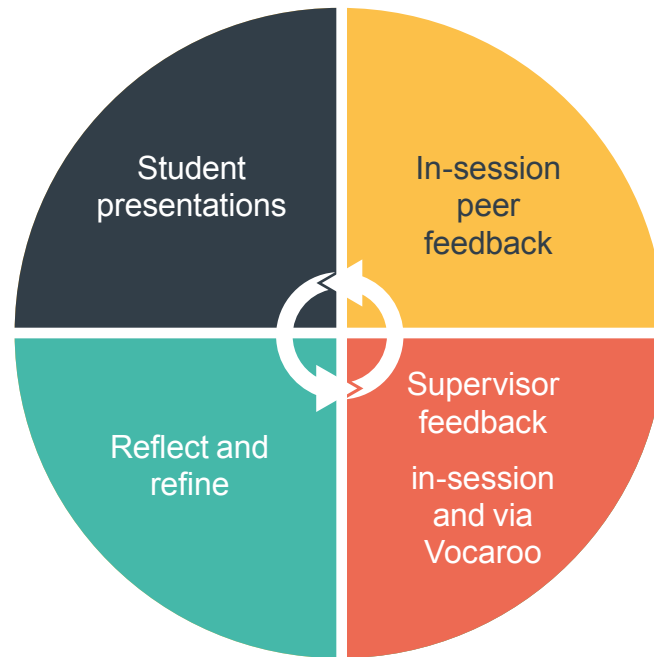
The focus of Part Two (comprising six workshops) was on the understanding and articulation of graduate skills sought by law firms. The first workshop saw students researching job specifications for junior legal roles to identify the skills and attributes required by law firms, and then choosing from these the three skills they wished to focus on articulating during the module. Further workshops covered issues such as providing concrete examples to support assertions of possession of skills and attributes and in practising the STAR technique (Situation, Task, Approach, Result) in response to situational/competency-based questions likely to be raised during interview.

2.4 Delivery

Students led every workshop, preparing PowerPoint presentations and detailed notes for the benefit of their colleagues and uploading them to the module's Teams site prior to the workshops.

During sessions, students presented their work, receiving peer and module leader feedback on both presentation style and substantive content, as well as private audio feedback (recorded and emailed via the Vocaroo platform) from the module leader within 24 hours of the session. I adopted a purely facilitative role during sessions, ensuring students kept to time with their presentations, providing feedback and making sure all students had the opportunity to provide constructive feedback to their peers.

Figure 3. Workshop delivery and feedback cycle



2.5 Assessment tasks

The presentation

An extract from the assessment brief is reproduced below.

EITHER:

Presentation to the Senior Management Team (SMT) of the University of Wessex.

OR:

Presentation to the Executive Board of Minster & Sharp Solicitors LLP.

The organisation does not currently promote pro bono work. Please prepare a 10-minute research-informed presentation to the panel designed to persuade them to make a commitment to pro bono and outlining how this commitment could be structured. You will be expected to back up your assertions with evidence.

The students felt this would be an innovative method of delivering the research they had undertaken in Part One of the module. They railed against assessment via an essay (which they felt bore little resemblance to what they would go on to do in working life), and wanted to use the assessment itself as practise for tasks expected of them in the workplace.

Formative assessment for this task was provided by way of peer and module leader feedback during the first two workshops.

Students wished to retain the choice to deliver this presentation live to the module leader or to submit a video recording, and this choice was included in the assessment brief. All six students ultimately decided to submit via video recording.

The interview

The second task consisted of an interview for a legal role, with the module leader playing the part of a law firm's Training Principal, responsible for recruiting trainee solicitors. The questions to be asked were negotiated in advance via workshop discussions, during which students considered the questions most likely to arise and those for which they felt most in need of preparation.

The assessment brief consisted of an email inviting the student to a 20-minute interview which entailed:

- 1 Delivering a five-minute presentation entitled 'Does pro bono work at university prepare you for life in legal practice?', including consideration of the top three skills/attributes necessary to succeed as a junior lawyer, and how their experience of pro bono work had enabled them to develop these skills/attributes.
- 2 A series of questions dealing with (i) why they feel they would be an asset to the firm; (ii) which attribute/skill they feel they need to work on; and (iii) a competency-based 'tell us about a time when...' question which required the use of the STAR technique to respond fully. Students were informed beforehand that this final question would encompass one of the topics below (a decision as to which was made by me during the interview to ensure we could cover ground not already covered by the presentation and/or answers to previous questions):
 - + influencing others
 - + showing good teamwork skills
 - + adapting to changing circumstances
 - + dealing with a difficult situation
 - + learning from a mistake
 - + solving a problem in a creative way.

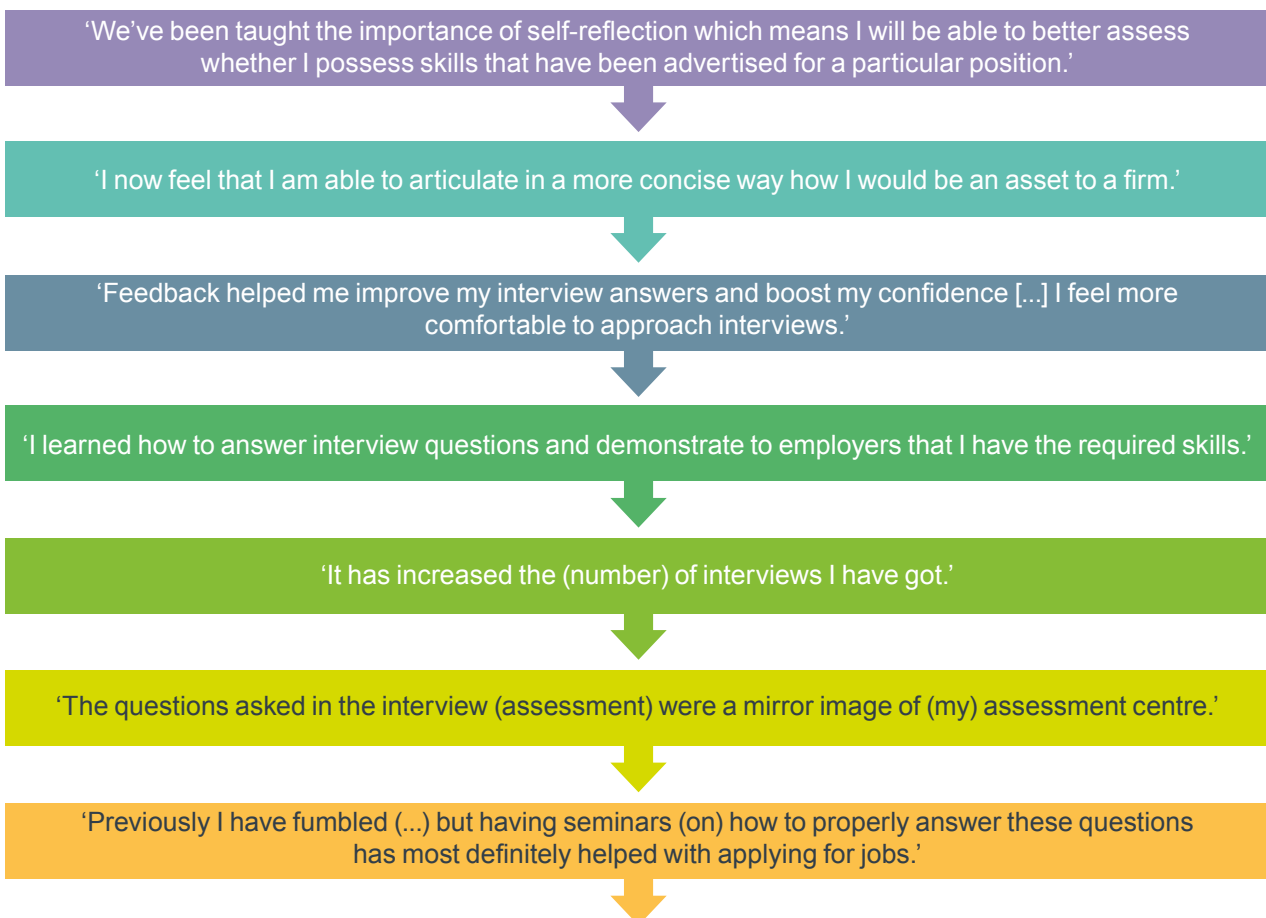
By way of formative assessment, I worked with the University's Careers and Employability team to set up a mock interview via the shortlist.me platform. I recorded video clips asking the questions that students would be required to answer in their assessed interview. Students then recorded themselves answering these questions and received instant feedback from the electronic platform on their pace and clarity of expression, as well as pointers from me (via pre-recorded video clips after each question) as to what I was expecting from the structure of the answers, enabling students to check they had provided sufficiently full responses.

Students decided that the summative interview should be held live (with no option for pre-recording), to replicate a real-world interview as closely as possible.

Outcomes

I conducted a series of ethically approved surveys with the students during and after the module. Three main employability-related themes emerged.

- 1 The module content has had a direct impact on students' articulation of their skills – and thus on their prospects of securing a graduate role:



- 2 The module has instilled a deeper understanding of social responsibility, which students will carry into their working lives:



- 3 While we did not set out to achieve this, a side effect of the delivery of this module is the development of collaborative skills crucial to success in the world of work: active listening, peer support and being welcoming of constructive feedback.



Where do we go from here?

Such was the positive impact of Part One of the module on student attitudes to social responsibility, I am currently developing a 40-credit optional Level 6 module around the core of this student-built content and assessment. The new, expanded, module (to be delivered from the coming academic year) will allow students to explore social responsibility and community engagement in even greater depth and will involve students working directly with local community stakeholders to understand their challenges.

Given its positive impact on students' employability prospects, from the coming academic year Part Two of this module will be drawn down from a Level 6 option to form part of a new Level 5 core module. This will enable more students, at an earlier stage of their undergraduate journey, to benefit from the opportunity to identify and analyse their skills for work.

Could this approach work elsewhere?

The approach explored in this case study was designed for Law students wishing to enter the legal profession. However, the exploration of social responsibility (and concomitant instilling of social responsibility in students), and the work done by students to articulate their skills for work (rather than being 'taught' a batch of skills in a classroom environment) can be applied to a variety of contexts and careers.

Engaging students with the question of how a module can best add value for them requires the module leader to treat their students as design partners (Todd, 2021), to have an open-mindedness toward student contribution to teaching and learning (Cook-Sather and Kaur, 2022) and a willingness to engage in genuine dialogue (Bovill, 2017), as well as being at once humble and courageous (Cook-Sather, in Healey and Healey, 2018).

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Employability in the fashion industry

Lisa Trencher, Employability Lead, Manchester Fashion Institute

Background

As universities focus on achieving targets for graduate outcomes (Healey, 2023), innovative approaches which embed employability within the curriculum are fundamental to success. Manchester Fashion Institute, Manchester Metropolitan University, acknowledges the competitive nature of the fashion industry, for both placement and graduate opportunities, and hence recognises the need to prioritise the development of student employability skills and industry readiness.

The rationale for a level 5 unit is to support readiness for applying to placement and internship opportunities. While not all students are exploring these options, it is timely for them to explore their professional and personal development.

The pedagogical approaches adopted for the unit focused on experiential learning and reflective practice. Numerous studies identified by Pitan and Muller (2019, p1272), agreed that experiential learning developed students' "essential employability skills that give them a competitive edge in terms of obtaining employment after graduation." The employability skills included "reflection and evaluation, transferable skills, self-confidence, self-efficacy, emotional intelligence, professional contacts, and professional qualities" (Pitan and Muller, 2019, p1272). Reflective practice is not new, it is identified within several studies as linking to the development of employability skills. Notably the CareerEDGE model (Dacre Pool and Sewell, 2007) discusses the value of reflective practice and its links to emotional intelligence as a key contributor in the development of employability skills (Dacre Pool, 2016).

Working closely with our industry partners to gain their insights and knowledge of graduate recruitment processes also supported planning for the unit content.

Delivering at scale: at level 5 semester 1, over 500 students undertake a 15-credit employability unit. The unit spans all seven undergraduate courses within MFI, incorporating both creative and business students. To ensure an inclusive, impactful learning experience required careful consideration and planning. A team of six academic staff delivered the unit, with some support from the central careers team and facilitation from an external company (Gradcore) for a mock assessment centre event.

The unit was designed to replicate the fashion industry recruitment process. The assessment for the unit was designed to enhance student confidence and provide students with resource/tools to maximise their competitiveness in the jobs market. It provided a platform on which students continue to build their employability skills throughout their degree.

Approach

The unit structure is outlined below; the unit ran for 10 weeks of semester 1. The lectures consisted of a two-hour lecture and a one-hour workshop. The lecture was repeated and was delivered to a) business students, b) creative students. The workshops were groups of approximately 30 students and were repeated to accommodate large numbers.

Unit structure	Content
Two hour lecture	Delivering relevant content following the recruitment process and personal development activity.
One hour workshop	Students worked on specific tasks for the week, workshops facilitated by teaching staff.

Students replicated simulation of the recruitment process for subject-specific job roles within the fashion industry. The unit followed the process from application form, CV creation, digital competency tasks, concluding with a live mock assessment centre event. To aid students they were given a 'task planner' to record their progress and any comments. Students could complete all the formative tasks or a selection of them. The tasks (which were given a small percentage of marks for completion) were designed to inform the summative reflection. Marks were also given for the creation of their 'data CV' and their 'tailored CV', which related to a job role specific to their individual courses.

Unit tasks (*A small % of marks was awarded for engagement in these tasks.)

Create a data CV using a template.	Complete an application form.	Create a LinkedIn account	Complete digital tasks eg work personality test	Tailored CV to a course specific role.	Create presentation to deliver at assessment centre	Attend mock assessment centre	Reflection on the unit
Summative	Formative*	Formative*	Formative*	Summative	Formative*	Formative	Summative

Mock assessment centre activities

Task 1	Task 2	Task 3
Individual presentation, delivered to a group of peers	Group task relating to the specific job role.	One to one interview

Reflection

It was important to introduce students, most of whom had not written reflectively previously, to an accessible student-friendly model and ensure they understood the purpose and value of reflection. The model selected was Rolfe et al (2001) as the three stages – What? So what? Now what? – provided a framework for students to explore and capture their learning and devise actions for moving forward

Outcomes (So what?)

The unit provided impactful evidence – to support the transformative development of employability skills, as evidenced by the powerful narrative from students within their reflections. It also provided students with the opportunity to assess ‘where they are’ as individuals in their employability journey and an action plan for moving forward. Students developed an understanding of networking/ importance of developing a personal profile via LinkedIn and many continue to develop this post unit. The unit highlights the importance of the student voice and their role, arguably as co-creators of the curriculum.

The impact of specific tasks; most notably CV development, the value of beginning to network on LinkedIn, work personality test and attendance to the mock assessment centre. Regarding the mock assessment centre ‘97% of students would recommend the experience’ (Gradcore). This highlights the value of experiential learning and reflection as recommended pedagogies in the development of employability skills. The learning also provided immediate support for students applying for placements in addition to longer-term work experience and graduate roles.

Student reflections

“At the beginning of the unit I felt intimidated by the content included...going through this unit reassured me that I have the skills to be employable, with an industry ready CV and experience in job applications.”

“At the beginning of the unit, the assessment centre felt daunting... However, after successfully completing the unit, my overall feedback was very positive. It has made me believe in the abilities I have.”

“The confidence I have in myself has majorly improved since the beginning of the unit. I have learned certain thing about myself through doing the assessment centre in addition to the personality test.”

“When starting this unit, I felt nervous about attending the assessment centre as I was unsure of what to expect and how I would succeed... I am now confident that I will be able to attend an assessment centre and be fully prepared. This new knowledge about myself has made me see the bigger picture of this whole unit.”

Opportunities (Now what?)

Curriculum development

The student narrative will contribute, inform and enhance the curriculum moving forward, as both academic and careers teams gain insight of student perspectives. The scale of the unit in terms of student numbers will further support a diagnostic approach to curriculum development. There is also an opportunity to link the unit more explicitly to the university 'Graduate Attributes' and 'Future Me' framework – a personal development plan designed to support the student journey (Manchester Metropolitan university). In addition to curriculum innovation, there is an opportunity to develop additional co-curricular activity through initiatives such as RISE (Manchester Metropolitan University co-curricular offer to support the development of student employability skills) or link specific resources more explicitly to the unit, for example, resources to support the development of employability skills relating to sustainability, entrepreneurship.

Opportunities at level 4

Tutor observations of students at the beginning of level 5 note the opportunity to explore further opportunities at level 4 in preparation for the unit. Most notably, an opportunity to create a professional CV, LinkedIn profile and gain an understanding of job roles and central careers support available to them. This has been addressed to some extent by the creation of a 'fashion-specific employability' resource on Moodle, which combines central careers resource with fashion specific resources such as job roles, fashion industry database, portfolio development and resources to support careers in sustainable fashion. In collaboration with the central careers team, an online course to begin this development at level 4 has been created. This will be completed via the personal tutoring framework (built into student tutorials for semester 2). Initiatives 'in curriculum' at level 4 include 'job of the week' introducing students to relevant roles and linking to curriculum content in addition to external industry engagement.

Inclusive practice

A large cohort inevitably has differing needs and backgrounds, and it is important to continue to work on strategies to support inclusivity of all students – in this case to encourage all students to attend the assessment centre and develop their confidence towards their employability. This is acknowledged in the wider employability landscape – both skills and graduate recruitment. It is essential to work with wider teams within the university (and externally) to ensure tutors are aware of resources and strategies to support this.

Longitudinal study

There is an opportunity to do a longitudinal study to measure the impact in student confidence, securing placements and graduate destinations. This could also be measured in terms of inclusivity of student groups to support strategies moving forward. In addition, Gradcore, the external provider, was able to provide a breakdown by course of student performance at the assessment centre, which will also inform the curriculum moving forward.

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Embedding Future Skills: A university-wide approach

Annie Yonkers, Kingston University

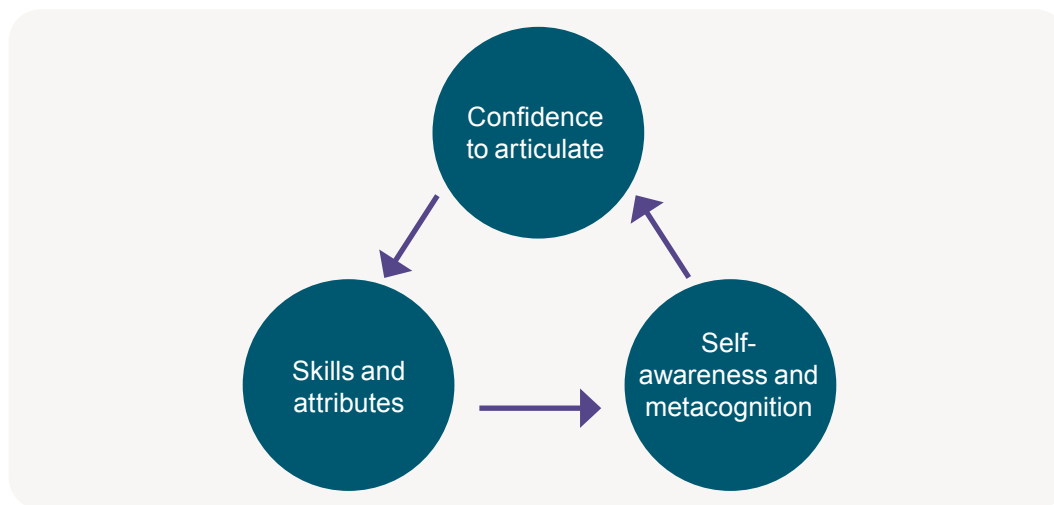
Background

According to the 2022 Kingston University Future Skills Report, skills including communication, adaptability, creativity and relationship building are key to addressing the global challenges our graduates will face during their professional lives (Kingston University, 2022a). But where do students learn these skills, how do they develop the confidence to articulate their value in the myriad professional contexts they may encounter? Kingston University's Future Skills Student Journey hopes to address these challenges by developing a collaborative and student-centered approach to a skills-based curriculum at Kingston built on the foundations of the [Inclusive Curriculum Framework](#) used at Kingston over the past eight years.

Looking at the wider sector of higher education (HE), the thresholds set by the Office for Students' (OfS) B3 Conditions are scrutinising how universities prepare students to progress to graduate level employment. With more responsibility on institutions to take ownership of this transition, it requires strategic vision and direction to develop approaches that support students at scale to realise their professional ambitions.

As one of the most diverse universities in England (Foulds, 2023), many of our graduates face structural and systemic barriers outside of their control which may impact their transition into employment. Therefore, it was imperative to design a solution that recognises and values our students as holistic individuals, and does not rely on accessing this type of content beyond their curriculum. Using Tomlinson's model, the Future Skills Student Journey creates scaffolded and explicit space for students to cultivate all five aspects of 'Graduate Capital': Psychological, Identity, Cultural, Social, and Human (2017) to ensure students are confident to advocate for themselves in a wide range of professional contexts on graduation. Using the research findings from the Future Skills Report, we have developed a skills-based curriculum rooted in meeting students where they are to develop, reflect on and articulate their many skills and attributes in contexts relevant to their own courses of study, personal identity and future aspirations. Our 'Future Skills Student Journey' creates the space within the curriculum at each level of undergraduate study for students to achieve this as a core part of their course across the institution.

Using Tomlinson's model of Graduate Capital, our approach recognises that each area with Graduate Capital requires specific and intentional support to develop. Beyond the active development of these areas, we recognise students need further support with learning how to reflect on experiences and articulate their value in different contexts. As Maxine Greene noted, "To help the diverse students we know articulate their stories is not only to help them pursue the meanings of their lives ... to be fully participant in this society, and to do so without losing the consciousness of who they are" (1995). Our approach recognises that the active development, reflection and articulation of students' learning



requires explicit and supported space to develop.

Approach

To enact this student journey on an institutional scale, we are embedding two institutional ‘Future Skills’ learning outcomes at each level of undergraduate study over the course of the next three years, each intentionally written and scaffolded to build on two themes year on year. These themes include: the development and articulation of self, and the demonstration of skills and attributes in different contexts. These learning outcomes will then be assessed in the curriculum alongside subject-specific learning outcomes within core modules.

Implementation timeline of embedding institutional learning outcomes:

2022-23	2023-24	2024-25	2025-26 – full implementation
L4 Prototyped	All Courses in L4	All Courses in L4	All Courses in L4
	L5 Prototyped	All Courses in L5	All Courses in L5
		L6 Prototyped	All Courses in L6

We are able to take action at this level at Kingston as part of a wider strategic ambition to create a progressive model of education (Kingston, 2022b), equipping all students with the skills they need to realise their professional aspirations. As such, we have had support at senior leadership level across the institution to enable the scale of change. Over the academic year from 2022-23 we prototyped our approach to the first year of the journey, to gather learnings in real time to inform the wider rollout and further implementation over the coming years.

While the learning outcomes are mandatory across the institution, how course teams choose to realise, enact and assess the learning outcomes is at the discretion of the teaching team. This provides a framework for our approach while still allowing course teams to have agency in

the contexts of their courses and disciplines. However, one key aspect of this framework is the expectation of collaboration in delivery in partnership with colleagues from the central careers service. This team provides support for 'Future Skills' content as well as key learning and teaching directly aligned to the learning outcomes. Courses work in close partnership with faculty-aligned Employability Partners from the central careers team who act as trusted advisors and consultants on career development learning and are key stakeholders in the collaborative approach to this model of curriculum development. The Employability Partners manage faculty-aligned teams who deliver specialist personal and professional development content and activities aligned to the 'Future Skills' learning outcomes to build all aspects of Graduate Capital. We have developed a core narrative for this content that is then contextualised with the course teams and the assessment strategy to ensure it resonates with students in their context. The minimum expectation of delivery from this team is six hours of content at L4, and four hours each in L5 and L6. Topics include developing self-awareness, exploring values, reflecting on experiences and articulating graduate attributes in varying contexts.

Beyond the collaboration between the central careers service's Employability Partners and course teams, in order to support the rollout of this journey at scale, we also identified a need for wider staff development to enable colleagues at all levels in the institution to have the confidence and competence to realise these 'Future Skills' learning outcomes in their contexts if they hadn't previously worked with their Employability Partner, or if they didn't feel as confident in this area of teaching and learning. As these learning outcomes become mandatory, additional support for topics, including developing authentic assessments for 'Future Skills', is essential for staff to succeed with confidence.

To achieve this, I co-led an institutional project from August 2022 to October 2023 with the Head of Curriculum Development from our Academic Services department, to drive a change project with dedicated workshop 'labs', support sessions, and asynchronous resources to equip colleagues with both the rationale and resources to deliver on our ambitious strategy. A key aspect of our delivery was the importance of modeling effective collaboration between academic services and professional services, because delivery of this programme brings professional services and academic colleagues together in the design of the curriculum intentionally and explicitly. Through this project, and the wider strategic implementation project being equivalently co-led across professional services and academic leadership, we were able to approve course changes to embed these learning outcomes, and support teaching colleagues across our entire provision ahead of the institutional launch in September 2023.

Outcomes

We are in the initial stages of implementing the whole Future Skills Student Journey, but early findings are promising. Referring to Dr Nigel Page's case in a previous edition of this report, he noted in his module, which was one of our prototypes, that "We have seen a dramatic increase in student engagement with their personal development, up to 92.5% compared to 63.2%, 66.4% and 64.5% in previous years and the awarding gap essentially closed (25% to 0.08%)" (Page et al, 2023).

Additional early-stage findings indicate that students are eager for this type of learning, recognising that personal development is key to their overall success beyond university. As one student from a

prototype module said, “Having it be part of the curriculum we’re studying makes it a lot more valuable for us because it gives everyone the same set of skills to leave university with at the end” (2022).

Beyond the student experience, we have also been learning that, as an institution, taking an intentionally collaborative approach, while challenging and ambitious, allows for new connections to be made across the university between staff as well. Some feedback received from colleagues across the institution from the dedicated development sessions include, “This session gave very interesting and novel perspective of contemporary student assessment techniques and showed how to link them to [our] strategy and skills attributes... This is exactly how I see modern teaching.”

From this stage, we are progressing with the implementation of the second and third years of the Future Skills Student Journey, which will enable students to demonstrate the Future Skills graduate attributes in wider contexts beyond their discipline and to address complex challenges beyond the university. These experiences, as part of their core curriculum, will ensure that students have examples and evidence to bring to their transition into employment. These experiences will be complemented with workshops and activities to support their ability to articulate and advocate for themselves in contexts relevant to their professional goals.

Further development of this student journey will include extending the Learning Outcomes to postgraduate courses. We recognise the importance of this type of work at postgraduate level as well, but further development must appreciate the potential epistemic differences between the nature of the cohorts at undergraduate and postgraduate study at Kingston. As our postgraduate cohorts are typically weighted towards international students, with many coming with previous work experience, there is a slight shift and nuance in how to effectively scaffold and support this type of holistic development effectively for their needs and aspirations.

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Enterprise education

Dropping the E-words: an introduction to threshold concepts in entrepreneurial thinking and their benefits to educators seeking to integrate enterprise and entrepreneurship in their curriculum to enhance employability

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Background

In today's rapidly evolving job market, it has become increasingly crucial for higher education institutions to equip students with the skills and mindset necessary for their future success. Enterprise and entrepreneurship are often recognised as key drivers of innovation, economic growth and employability (Nabi et al, 2017). However, the traditional 'e' words – 'enterprise' and 'entrepreneurship' – are value laden, and sometimes carry negative connotations and restrictive associations. These words can cause resistance from both academic teaching faculty and students (Smith, 2008). To address this challenge, a sustainable and innovative approach is required which deconstructs the 'e' words, circumventing the negative perceptions sometimes associated with them and promoting the benefits of entrepreneurial thinking and practice in a way that is accessible to educators and students across all academic disciplines.

This case study is situated within the broader context of higher education institutions seeking to enhance the employability of their graduates through the integration of enterprise and entrepreneurship education in all academic discipline areas. According to the QAA (2023, p10),

“Beyond employment, entrepreneurship education provides competencies to help students lead a rewarding, self-determined professional life, well placed to add social, cultural and economic value to society through their careers.”

Advance HE underscores this perspective (2020), with a quote from Stuart Norton (Senior Adviser, Learning and Teaching) as follows,

“Through the 3 Es – Employability, Enterprise and Entrepreneurship education – we can help students to generate and apply ideas within different contexts; engaging creativity, idea generation, problem solving and innovation. As a result we will develop learners with a mindset and a set of skills that will enable them to respond to opportunities and needs, develop their initiative, explore decision-making under uncertainty, and focus on problem-solving, communicating value to others and their own personal effectiveness to help them become better students, citizens and leaders of tomorrow.”

However, there are some significant barriers to integrating the teaching and learning of entrepreneurial thinking in higher education. These include:

- + traditional academic cultures with established curricula, resistance to change, risk aversity and a lack of awareness of the value and relevance of entrepreneurial thinking (Neck and Greene, 2011)
- + lack of faculty expertise in teaching and learning entrepreneurial thinking (Gibb, 2011)
- + limited resources to develop and implement entrepreneurship education, together with limited support infrastructure (Kuratko, 2005)
- + limited collaboration and interdisciplinary approaches due to existing organisational structural constraints and departmental silos as well as accreditation and standardisation requirements (Bacigalupo et al, 2016)
- + lack of student interest if entrepreneurial career paths are perceived as riskier or incompatible with their personal values (Fayolle and Gailly, 2015).

But most importantly, enterprise and entrepreneurship are sometimes still perceived as being exclusively, or at least more, relevant to business or economics disciplines, and their inclusion in other fields can be met with scepticism or uninterest by both staff and students. The 'e' words can carry associations of risk, profit-driven motives and exclusivity, which can deter educators from integrating them into their curriculum (Lackéus, 2015). This case study addresses some of these challenges by deconstructing these terms, and re-conceptualising enterprise and entrepreneurship using the threshold concept approach (Hatt, 2020). In this way an alternative framework is offered that enables the transformative power of entrepreneurial thinking and practice to be integrated in all academic disciplines.

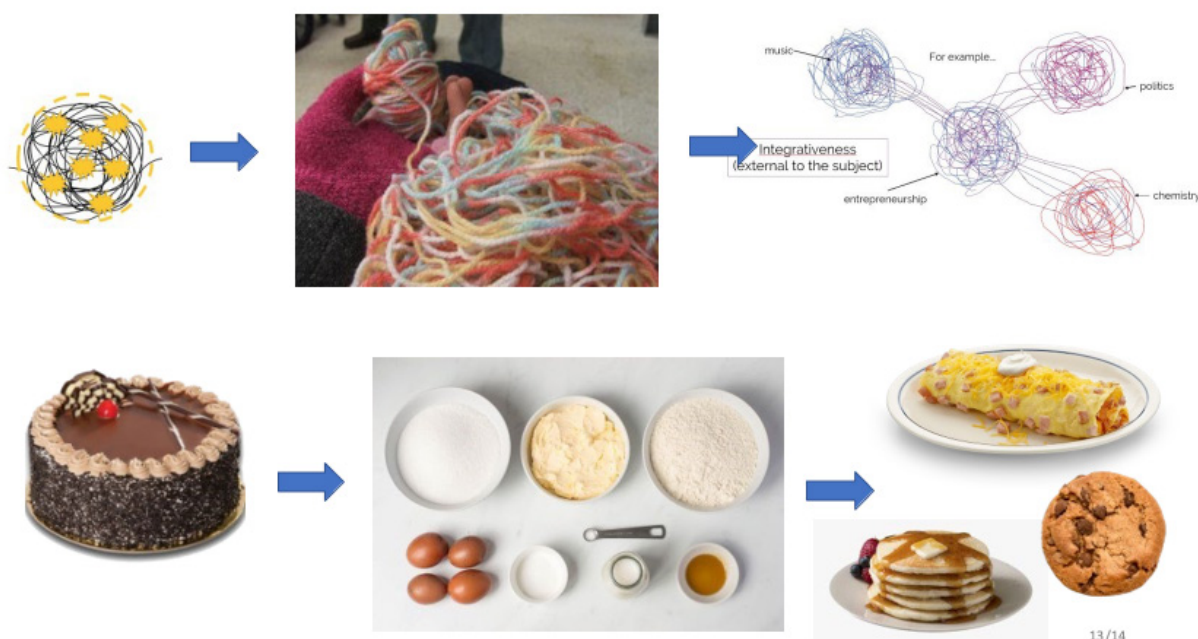
The broad concept of entrepreneurial thinking can be deconstructed using the threshold concept approach (Meyer and Land, 2003, p2005). Threshold concepts provide a lens through which educators can conceptualise learning and identify key transformative ways of thinking and practising within their discipline. They represent those core ideas that, once understood, significantly enhance a student's understanding and practice within a discipline (Cousin, 2006). By identifying and agreeing either predefined or more situated threshold concepts in entrepreneurial thinking, educators can overcome the barriers to mastery in their respective area and design curricula that promote entrepreneurial mindsets and skills using the discourse of their subject, without having to rely on traditional business related or venture creation terminology (Hatt, 2021).

Imagine you want some eggs, but you only have a cake. You don't want the whole cake and all its ingredients; you just want the eggs. It is hard to know how to extract and contextualise specific aspects of enterprise and entrepreneurship education from a framework while retaining the overarching aim. Especially when many of the 'ingredients' don't look like they are specific to enterprise and entrepreneurship, such as 'interpersonal skills'. The threshold concept approach offers a way of deconstructing enterprise and entrepreneurship as if you could deconstruct a cake – so you

can re-apply the individual ingredients (like eggs) in ways that better suit your own context. Traditionally, enterprise and entrepreneurship education has focused on founding businesses that create financial profit (Peschl, Deng and Larson, 2021). By selecting and focusing on an academic subject-area-relevant selection of threshold concepts in entrepreneurial thinking, educators of all disciplines can transcend this constrained perspective and tap into the interdependent and integrative potential of entrepreneurial thinking, applied in the context of their own subject area.

Trying to integrate broad concepts such as enterprise and entrepreneurship in your curriculum can also feel a bit like trying to fill a suitcase with too many clothes. Just as sometimes you don't want the whole cake, you just want some of the ingredients. Another way of thinking of it is like this. Imagine each threshold concept in entrepreneurial thinking is a thread of wool. Each knot of threads or concepts forms a 'subject'. Each thread can also form a knot with a different selection of threads and form another subject. Rather than taking entrepreneurship and enterprise as a whole cake, you can consider its ingredients and choose if you want to make a cake or other dishes. You can mix a selection of threshold concepts in entrepreneurial thinking with threshold concepts from your own discipline. You can pick and choose 'ingredients' or threshold concepts in entrepreneurial thinking to create new recipes for new and delicious dishes (Figure 1). Enterprise and entrepreneurship can be educational philosophies, academic subjects and new value creation paradigms (Lackéus, 2015).

Figure 1. Illustration of metaphors used to explain how threshold concepts can be used to deconstruct the broad concepts of enterprise and entrepreneurship and enable their integration with other subject areas.



Candidate threshold concepts in entrepreneurial thinking have been suggested in doctoral research by Hatt (2020) and in the specific context of the Centre for Innovation and Entrepreneurship (CfIE) at Bristol University (Jarman and Hatt, 2021) in an EEUK-funded project.

Threshold concepts in entrepreneurial thinking have been used both to develop curricula and to enable evaluation of curricula effectiveness. In addition, defining threshold concepts in entrepreneurial thinking mean that we can be more certain that 'entrepreneurial' means something distinctive. Educators in other disciplines beyond Business are starting to recognise the potential of this approach in their subject areas to facilitate the integration of enterprise and entrepreneurship, without using the 'e' words.

The process of developing a local set of threshold concepts in entrepreneurial thinking also offers educators an opportunity to develop and use a common language, with a shared understanding (Land, Rattray and Vivian, 2014). And most importantly, the threshold concept approach allows us to emphasise the notion of value creation in enterprise and entrepreneurship, meaning they are more easily applied to an agenda of social justice, eco-justice and hope (Dodd et al, 2022).

Approach

The seven candidate threshold concepts in entrepreneurial thinking developed at CfIE are presented here together with suggestions for adoption (Table 1). A full toolkit for developing and adopting situated clusters of threshold concepts in entrepreneurial thinking can be found on the [EEUK Enhancing the Curriculum \(ETC\) toolkit website](#). The threshold concepts are not intended as absolute fixed definitions, but rather as starting points for discussion, selection and further consideration and development by educators in their own context. It is intended that this cluster serves as a catalyst for dialogue and collaboration among members of a teaching team, who thereby foster a shared understanding of entrepreneurial thinking and its transformative nature.

Table 1. CfIE Threshold concepts in entrepreneurial thinking and tips for adoption (Jarman and Hatt, 2021)

	Extended description	Tips for adoption
Entrepreneurship is a practice	Practitioners understand that entrepreneurship is a practice that anyone can use in any context to create new value. It is a way of doing things, a way of thinking and practicing or a way of seeing the world, that manifests as creation of value in response to opportunities and challenges.	<ul style="list-style-type: none"> + Encourage the use of entrepreneurial thinking (ie seeking opportunities to create value) in diverse contexts beyond venture-creation activities and de-coupling entrepreneurial approaches from venture-creation outcomes. + Use examples and exemplars of entrepreneurial thinking and approaches from sources not traditionally associated with venture-creation (eg scientific discovery, social change, civic innovation). + Engage in discussion and debate with students about whether entrepreneurship is a process or a destination, who it is open to, and whether it is possible to think or act like an entrepreneur without having founded a venture.
Your context is your opportunity to create value	Practitioners habitually and constantly create and recognise opportunities within their own context to create value. Practitioners are habitually resourceful and make use of what they find to realise and exploit opportunities to create value.	<ul style="list-style-type: none"> + Encourage students to gather and curate diverse inspiration, opinion, and data to enrich the diversity of users and problems they are aware of and how they might respond to them. + Encourage students to both work within their existing means to solve challenges (rather than develop pie-in-the-sky solutions) and to harness their existing know-how and resources as creative constraints to their process. + Use regular small formative tasks that focus on action rather than planning to learn something useful.

<p>Value is defined by others:</p>	<p>Practitioners understand only other people can define the value of what they have created, and others demonstrate the value they place on what is being offered by being prepared to give something tangible or intangible in exchange for it (money, time, goodwill etc).</p>	<ul style="list-style-type: none"> + Discuss and debate the different ways in which people and groups value specific items in different contexts (ie diamonds are expensive but useless, water is cheap but essential). + Encourage stakeholder engagement and empathy when solving problems, and as openly as possible so that they are discovering opportunities valued by others rather than simply trying to validate their own assumptions. + Highlight the value of testing and prototyping assumptions in a manner that specifically tests the value that stakeholders are willing to transact to gain the proposed product or service.
<p>Iterative experimentation</p>	<p>Embracing small failures as a means of maximising opportunities to learn from mistakes as well as success. Just as the process of scientific experimentation where an experiment generates data, iterative experimentation in this context is less emotive and outcomes are not deemed necessarily to be “successes” or “failures”.</p>	<ul style="list-style-type: none"> + Encourage students to test early and test often to learn quickly through affordable losses. + Reward and celebrate both processes and pivots rather than rushing to polished outcomes. This might include allocating more marks to an account of a process, or a reflection on learning, rather than to a final project report or presentation. + Formalise early and frequent presentations of work (through pitches, progress reports, critiques and similar) but on a formative basis, to encourage making and testing assumptions and to develop a familiarity and resilience around constructive criticism.
<p>Recognises their agency</p>	<p>Practitioners recognise that they always have some agency to create value, or that it is at least beneficial to assume that they do and should take ownership of their actions.</p>	<ul style="list-style-type: none"> + Encourage the use of Systems Thinking approaches to break down complex challenges and find places where students can find leverage to effect change. Include these systems-mapping ‘first steps’ within any project briefing. + Acknowledge and celebrate student exemplars who have found a means to effect change on the causes and projects that matter to them. + Where possible apply a principle of ‘challenge by choice’ so that students are encouraged to set their own personal and professional challenges within and alongside the curriculum.

<p>Taking action</p>	<p>Practitioners know that intention must be translated into action for value to be created. Intention PLUS will be all-important to create or exploit an opportunity for value.</p>	<ul style="list-style-type: none"> + Wherever appropriate, encourage students to act on an opportunity where they can apply the principle of affordable loss to gain valuable learning. Reflection should also be encouraged to capture the value of the learning gained. + Encourage, even demand, regular tangible outputs from students' work, both in progress and at summation. This might be prototypes, models, simulations, or reports back from completed action-steps such as research processes. + Create a safe and supportive environment in which action is rewarded. Inaction need not be punished, but students should be given regular and accessible opportunities to act on opportunities rather than simply do still more planning.
<p>Knowledge is always partial and often ambiguous</p>	<p>Practitioners understand that you can still act even if the situation is not perfect, ideal, or even favourable – but that the process of taking action is likely to lead to new situations, learnings, and ultimately opportunities.</p>	<ul style="list-style-type: none"> + Encourage, or even demand, students formulate strategies and proposals for their projects where they have substantial uncertainty about the relevant data. Encourage them to evaluate the risks vs the opportunities and suggest risk management strategies. Provide a debriefing and discussion about how risk is perceived and responded to. + Use examples and role models who set out and articulate the process of working in uncertainty and ambiguity. This might include risk management strategies, conceptions of risk-tolerance and affordable losses, and the value of treading where others are more risk-averse. Discussion 'about' risk and ambiguity needs to be balanced with students gaining experience of working in such conditions themselves. + Be artfully vague (where it is not problematic to do so) when setting challenges so that you can subsequently engage in a debate about responding to uncertainty.

Outcomes

The introduction of threshold concepts in entrepreneurial thinking can have a transformative impact on educators, their curricula and consequently on students and student outcomes. By deconstructing the 'e' words and instead focusing on the entrepreneurial ways of thinking and practising that lie behind them, educators can successfully integrate enterprise and entrepreneurship into any academic discipline. The approach enables educators to align across teaching teams, design effective curricula, and foster a culture of entrepreneurial mindset development across their academic unit. This, in turn, enhances students' employability and prepares them better for the challenges of a rapidly evolving job market (Hatt, 2021).

While the threshold concept approach has been applied usefully to develop the pedagogy of various academic disciplines, for example, economics, healthcare and information literacy, they have so far received little attention in the context of entrepreneurship education (Geiger et al, 2023). This case study emphasises the transformative power of threshold concepts in entrepreneurial thinking. By adopting this framework, educators can integrate entrepreneurial thinking and practice without relying on traditional terminology, thereby addressing the resistance towards the "e" words. The case study highlights this valuable approach as a means to promote and integrate the development of entrepreneurial mindsets and skills across the entire educational landscape.

Table 2 sets out how threshold concepts in entrepreneurial thinking might be used to integrate enterprise and entrepreneurship in any discipline to have a transformative impact.

Table 2. Using the threshold concept approach to integrate enterprise, entrepreneurship and employability in any academic discipline.

	Phase 1	Phase 2	Phase 3	Phase 4
Educator	Build psychological safety in the classroom Allow space for learners to make sense of the topic and its relevance to them	Identify and challenge pre-conceptions in learners	Create opportunities to experiment and become accustomed to ambiguity	Highlight connections between disciplinary concepts and threshold concepts in entrepreneurial thinking
Content	Make connections to existing knowledge base of learners	Introduce new ways of conceiving existing worldviews	Use variation theory to embed and explain conceptual fragments	Make connections to other threshold concepts in entrepreneurial thinking, use more examples and contexts
Method	Use repetition and reorganisation to achieve focus	Create apparent contradictions where the usual explanations don't work	Use case studies and role play, action learning and group dialogue to ensure learners construct evolved perspectives	Consolidate through application to different contexts, encourage critical reflection
Learner	Consider and address the concerns of the learners and their specific interests	Look out for questions that reveal legacy understanding and hold learners' uncertainty and doubt	Resist the temptation to "save" learners in their newly vulnerable state	Explore the consistency with which learners can adopt their newly gained perspectives
Assessment	Short written pieces to explore existing conceptions	Reflective assignments to assess progress of separation from re-conceptions	Assess emotional responses as useful indicators of learner progress	Compare understanding and expertise through assessment of discourse before and after intervention

The implementation and evaluation of the impact of adapting and adopting the threshold concepts in entrepreneurial thinking in curricula across different academic disciplines and institutions is recommended. Longitudinal studies could further assess the long-term effectiveness of this approach in enhancing student learning outcomes and employability. Ongoing research and collaboration with educators from various disciplines would expand the range of threshold concepts and refine the cluster of threshold concepts in entrepreneurial thinking for applications in diverse contexts. Please contact the author if you are interested in taking any ideas presented in this case study forward in your institution.

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Embedding interdisciplinary enterprise education for the cultural and creative industries in the curriculum

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Background

In 2022-23, City, University of London created a new academic school, the School of Communication and Creativity (SCC), to strengthen our focus on the cultural and creative industries as a key area within business, practice and the professions. This new school encompasses Journalism, Media, Culture and Creative Industries and Performing Arts and has a stated ambition of fostering cross-disciplinary collaboration across discipline areas. It is widely recognised that self-employment is common in the cultural and creative industries (CCI), which many of the students within this School aspire to enter (Mould et al, 2014). Our strategy is to recognise and celebrate that entrepreneurship takes many forms. We have broadened the traditional scope of our enterprise support to include individual freelancing, which might form one element of an individual's portfolio career in addition to the more traditional start-ups which are ultimately intended to become large-scale businesses.

Against this backdrop, as 'The University for Business, Practice and the Professions', employability is a core theme at City, University of London, so much so that we have embedded employability as core and credit bearing in all undergraduate programmes under the banner of our strategy The Career Activation Programme (CAP). The CAP includes the requirement for all undergraduate students to complete a professional experience module as part of their course. Many SCC courses have a 'core-elective' professional experience structure in which students have a choice of professional experience modules to reflect their diverse career opportunities and goals.

The 'Freelancing and entrepreneurship in CCI' module is the natural result of our commitment to embedding professional experience in the curriculum and our desire to support our students to thrive as self-employed professionals within the cultural and creative industries. The introduction of this new module has followed an experimental approach whereby we have adopted creative and agile planning methods to devising how best to structure our intended learning within the modular framework.

This new module has a number of innovative dimensions:

- + the focus on freelancing as an important and equally valid form of entrepreneurship compared to the more traditional view of creating start-up businesses intended to grow into large, complex organisations
- + the content includes practical topics such as the legal and financial aspects of freelance employment often neglected in favour of theory
- + the module is credit bearing and is one of the modules undergraduate students choose from as part of their mandatory requirement to complete a professional experience module

- + the module delivery is interdisciplinary, both across subjects (six courses) and levels of study (6 and 7)
- + teaching is via co-delivery by school academic faculty and the centrally based enterprise education professional service
- + the inclusion of equality, diversity and inclusion content to reflect the structural inequities students of colour may encounter in the CCI sector.

When shaping the module we found it helpful to follow the experiential approach typified by Bath et al (2004), whereby we have encouraged a process of action learning through bringing together colleagues across City with diverse areas of professional expertise to create a valid and living curriculum. We were also inspired by the work of Bovill (2014), who articulates the value of co-creating a curriculum that would ensure an effective transition from competency to employability for its graduates. Our approach reflects the broader sector trend of using frameworks such as the European Entrepreneurship Competence Framework (European Commission, 2023) as a reference point to focus on the mindset, skills and knowledge needed to develop successful freelancing careers. As we come to evaluate the initial delivery of the module, we will use this framework and others we have developed internally to adapt and improve the design and delivery of the module.

Approach

The project was a collaboration across academic schools and two professional services, led by the Associate Dean for Employability, Enterprise and Engagement in the School of Communication and Creativity, the Head of Student Entrepreneurship and the Director of Careers and Employability. These three project leads created the vision for the module and, once the module planning was at a developed stage, discussions were held with the programme directors of SCC courses to identify interest in adding the module to their portfolio. Support was provided by the Learning Enhancement and Development department to ensure that the module was designed in accordance with relevant academic quality standards, given the complexity of the module and it spanning two levels. With this support we created separate level 6 and level 7 module specifications with learning outcomes at the appropriate level and nuance applied to the assessment. Planning took place throughout the academic year 2022-23 and the module was approved to be delivered from 2023-24. In year one of delivery the cohort will be capped at 35 before increasing this in future years in accordance with student demand.

The module is interdisciplinary as students from six programmes study side by side, enabling the sharing of diverse perspectives and skillsets. The six programmes are:

- + BSc Media, Communication and Sociology (MCCI)
- + BMus (Performing Arts)
- + BSc Music, Sound and Technology (Performing Arts)

- + MA Culture, Policy and Management (MCCI)
- + MA Media and Communication (MCCI)
- + MA/MFA Creative Writing (MCCI).

The aims of the module are for students to gain and develop:

- + awareness of the freelancing landscape of the creative industries
- + confidence in their value proposition within the sector
- + knowledge of practical considerations such as legal and financial arrangements
- + knowledge of how to develop a portfolio, respond to briefs and gain clients
- + knowledge of how to work with others to scale their business
- + ability to network and develop relationships with entrepreneurs in diverse areas within the creative industries.

Teaching content includes:

- + industry context; getting started in the creative industries
- + value proposition and market fit; creativity and innovation, determining market fit in your industry and understanding benchmarking
- + managing yourself as a business; setting up your business
- + getting clients; building a portfolio and promoting yourself
- + building your business; pitching your business, networking and working with others and building, scaling and funding your business
- + intellectual property rights.

Teaching is delivered by a combination of the academic module leader, professional service staff in the student entrepreneurship team and industry specialists and guest lecturers according to respective experience, research and expertise.

The assessment has two components.

- + Part 1: group presentation (30% weighting). Students will create and pitch a publishable-ready audio/video/media content product in response to an authentic brief. In accordance with the need to differentiate between level 6 and level 7 students, level 7 students will be required to show additional leadership and critical analysis skills.

- + Part 2: individual coursework (70% weighting) focusing on self-reflection relating to strengths and development areas as a future freelancer. The format enables students to have flexibility and creativity to submit work in a way that optimally reflects their learning style and planning stage regarding their future self-employment career. These formats include an essay, business plan; fundraising plan; personal development plan or audio-visual project.

Outcomes

While we are limited in our ability to evaluate the module at this early stage, student interest in the module has provided an encouraging early sign. For the pilot run in 2023-24 we have filled the 35 places from six courses.

Future evaluation of the module will be based on student feedback, feedback from industry experts, pre and post module learning gain related to confidence in pursuing a career as a freelance entrepreneur and longer-term we will track the employment outcomes of the students via the Graduate Outcomes survey.

Our experience of designing the module has resulted in learning that it is possible within quality assurance processes and regulations to enable students across subjects and levels to learn from each other, although this does require consideration in assessment design. We have found the experience of bringing together academic and professional service expertise to be positive and the student interest in the module shows that it can result in exciting curricula innovation, which is appealing to students. We believe there is potential to apply this approach to enterprise education in any discipline area or across multiple disciplines.

Our future steps are to fully evaluate the module after its first pilot run in 2023-24 and apply this learning when scaling the module for a larger student cohort in 2024-25 and beyond.

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Business in the Biosciences – a compressed format entrepreneurship course with employability skills at its core

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Background

Many undergraduate students start their degrees planning to pursue postgraduate research to enter an academic career. However, the academic route can only support a limited number of graduates, resulting in a diverse range of career destinations for students after graduation (Higher Education Statistics Agency (HESA), 2023), with only a third of Life Science graduates entering Science, Technology, Engineering and Maths (STEM) jobs (Smith and White, 2018). Unfortunately, much of the teaching and assessment in Life Science degrees is geared towards the discipline-specific skills emphasised within academia (Mantai and Marrone, 2023) and not those that are more relevant to securing jobs in non-academic career destinations, such as employability skills (Sarkar et al, 2016; Wakeham, 2016). As such, Life Science courses should further highlight to students the importance of employability skills and give them repeated opportunities to develop these skills alongside discipline-specific ones. Increasing student awareness of the career opportunities outside of academia is also important in increasing student confidence in applying for and securing positions after university (Ho et al, 2023).

Entrepreneurship is highly relevant within Life Science degrees and is essential for translating the discoveries generated by research into the applications needed in industry (one of the non-academic areas in which many Life Science students find positions). Introducing Life Science undergraduate students to entrepreneurship is not only important for industry, it is critical to many of the other sectors that Life Science students graduate into ie academia and government. Importantly, Life Science students are in the position, through their understanding of biology and nature, and their inherent curiosity, to discover new ideas. The next logical step for educators should be teaching students how to evaluate and exploit ideas through developing an entrepreneurial mindset and skillset alongside a suite of employability skills (Lackeus, 2015).

Approach

Our approach to combining employability skills development, entrepreneurship and alternative career opportunities for Life Sciences students at the University of Glasgow was to create Business in the Biosciences; a 20-credit final-year option course that inherently and deliberately embeds employability skills. In its first year (2022-23) this course ran with 15 students from six different

degrees (Biochemistry, Genetics, Molecular and Cellular Biology, Neuroscience, Pharmacology and Human Biology). We carefully considered course format, content and assessment design to improve engagement with employability skills and encourage entrepreneurial mindsets and skillsets.

Course format

Course sessions were delivered over 10 consecutive working days from 9am-5pm daily, following a compressed format (Davies, 2006; Turner, Webb and Cotton, 2021; Buck and Tyrell, 2022). Sessions were fully teamwork based (although assessment was individual) and comprised mainly of student-led active learning, self-directed work and presentations actioned within short timeframes (hours to days). We structured this timetable to simulate traditional workplace hours and create a more lived experience in which students must use resilience, adaptability, creativity, negotiation, decision-making and time management to interact with an open mind and break down any preconceived barriers about entrepreneurship. Additionally, because students and staff are working together intensively, a compressed format encourages strong relationships to be built (Centre for Education Statistics and Evaluation, 2022; Turner et al, 2021). For us, having an environment in which students feel comfortable and supported allows them to test a range of skills, experiment with new roles and receive constructive and personalised feedback from people who have watched their skills development journey.

The compressed format also facilitates teamwork by providing the time and mental space for students to focus solely on this course for an extended period. We encouraged students to identify their natural role in a team, using Belbin's team roles (Belbin and Brown, 2022), and to adopt a role that was new to them and challenged them. Several students wrote about this in their reflective journal assessment, describing how challenging they found taking on a new role within a team, but also what they learned about themselves and teamwork in general from attempting it – "It became clear towards the end of the event planning project that we should have allocated a team leader to keep control. I developed my leadership and confidence during the course and so in hindsight, I regret not volunteering for this role, as a chance to push myself out of my comfort zone, however, will ensure to do so next time" – student co-author.

Content creation

To ensure Life Science students can engage first-hand across disciplines, the business-specific content was taught by a range of experts, from lecturers in the Adam Smith Business School to staff in the Translational Research Support team, with many guest alumni entrepreneurs and local businesspeople highlighting applications of the taught content in practice and their own entrepreneurial journeys. Both course coordinators were also present for the full two weeks, delivering content around employability skills, guiding the student experience in linking across the different sessions and reflecting on what they learned from each session. The committed presence of both course coordinators further supported the strong relationship-building of this course.

In designing course content, first we selected key business concepts we wanted to cover (Table 1), followed by four key employability skills to embed throughout the course as detailed below:

Oral communication

As well as activities around narratives and storytelling, each group had to present informally at the end of each day, embedding feedforward opportunities with personalised staff and peer oral feedback. One of the most memorable sessions was based on students presenting from young children's books. The simple yet animated plots in these stories allowed students to disassociate the content from the act of giving a presentation. The introverted and extroverted students both pushed themselves to complete the challenge and learned about voice projection, tonal variation and the power of pausing during a speech.

Teamwork and negotiation

To encourage negotiation within teams, the first student-led task was to decide the assessment submission dates. After several iterations, agreement was to spread the submission dates across semester 1 and 2 to allow for feedback from one assignment before attempting the next. Almost all students reflected that they found this task difficult, but because many commented they would have acted differently if it were repeated, they appear to have learned something about themselves in the process – “I feel I could have done better during the negotiation activity to ensure more people got their opinions across. Reflecting on this activity, I learnt I still have key leadership skills to develop and perhaps need to focus on listening more than speaking out” – student co-author.

Creativity

Working as a single larger group, the students designed and implemented a bioscience event of their own choosing that has a benefit to the university or the wider community. The idea behind this part of the course was that the students implement, in a real-world application, the employability skills developed on the course. Work on this aspect of the course occurs outside the two-week timetabled teaching period, meaning time-management and adaptability are inherently practiced. This year the students created BioBabble – a networking event aimed at Year 1 and 2 Life Science students to meet older students and staff in an informal setting and learn more about the degrees and research in Life Sciences. It was a great event, which the students enjoyed planning and learned a lot from – “I was proud of how we worked together in the end to put on a successful evening, however, I will make sure to elect a project manager for any similar tasks I undertake in the future” – student co-author.

Resilience

Resilience is defined as ‘the capacity to recover quickly from difficulties’ and in this fast-paced course where the students are learning new skills and stepping out of their comfort zone, they encounter many difficulties. Some difficulties that became apparent during the course related to adapting to team decisions not going their way, struggling with perfectionism, and meeting tight and strict deadlines. Where this format of course was beneficial is the students don't have time to dwell on these issues, they must adapt and move on: “You just have to get on with it, you don't have time to build it up in your head” – student co-author.

Assessment

To align with outputs present in post-university employment, we decided to base the summative assessment entirely around coursework (1. Business model, 2. Business sales pitch, 3. Article for the general public and 4. Reflective journal) focused on different employability skills (Table 2). The format of each assessment also developed different skills, which was well received by the students because they felt the different assessment types emphasised different strengths. The first two assessments were done formatively as a group during in-class sessions using a business idea selected by each group, allowing peer support and staff feedback, before the individual summative assessments were required.

Outcomes

The driver for this course and its design was to develop students' employability skills, give insight into business and entrepreneurship and let students explore non-academic career opportunities, objectives which we think have been met – “I am not sure that a career in research is right for me, but this course allowed me to realise that working in genetics is still a career that I am excited to pursue, just as a CEO rather than CSO!” – student co-author.

Next, we aim to formally explore how much students perceive their employability skills are developing and how compressed format teaching could improve the student learning experience, following a similar approach to Swingler and Hendry (2019), which is planned for 2023-24. Based on student feedback, we will be shortening the length of the timetabled sessions from 9am-5pm to 10am-4pm daily, reducing the time allocated for some of the self-directed activities. We also distributed the guest lecturers more evenly across the days as the students felt those lectures happened too close to each other to fully engage with.

Many elements of this course could be easily adapted for other courses or disciplines, particularly the aim of embedding entrepreneurship and employability skills and the use of a compressed format. Additionally, the creative aspects such as using children's books, negotiating deadlines, and breaking down disciplinary barriers could all be applied elsewhere, with many long-term benefits for both students and staff.

Table 1. Business in the Biosciences timetable

Key taught business concepts are highlighted in blue*. Key taught employability sessions are highlighted in green*. Sessions that promote employability skills development through student-led activities are shown in orange.

*These taught sessions also included student led activities.

Week 1	Monday	Tuesday	Wednesday	Thursday	Friday
9-10am	Icebreakers and team formation	Ideas to opportunities roadmaps	Selection and rating of research ideas from University of Glasgow researchers to create group BMC	Business Model Canvas (BMC)	Sales and marketing
10-11am	How to work successfully in a team	Introduction to entrepreneurship			
11-12pm	Introduction lecture				
12-1pm	Assessment negotiations	Time management	Guest Lecturer		
1-2pm	Lunch	Lunch	Lunch	Lunch	Lunch
2-3pm	Assessment negotiations	Communication skills	Guest Lecturer	Summative BMC ideas brainstorming	Finance
3-4pm	Reflective and narrative writing session		Guest Lecturer		
4-5pm		Daily reflections and presentations	Daily reflections and presentations	Daily reflections and presentations	

Week 2	Monday	Tuesday	Wednesday	Thursday	Friday	
9-10am	Group work on BMC and Pitch	Bioethics and regulations	Group work on BMC and Pitch	IP self-directed activities	Event planning group work	
10-11am			Intellectual Property (IP) and legal aspects	Accessible event activity		
11-12pm		Event management-how and why				
12-1pm		Ethics debate session	Lunch	Lunch	Lunch	Visit Arcadia Science events
1-2pm						
2-3pm		Group work on BMC & Pitch	Guest Lecturer	Group Sales pitches	Event idea pitch	
3-4pm			IP self-directed activities (Case study search)			
4-5pm		Daily reflections and presentations	Daily reflections and presentations	Daily reflections and presentations	Daily reflections and presentations	

Acronyms: BMC – Business Model Canvas; IP – Intellectual Property

Table 2. Business in the Biosciences in-course assessments and grade distribution

	Business Model Canvas (BMC) and appendix	Business Pitch	Intellectual Property (IP) article	Reflective Journal
Description	Turn an idea into a business model using the business model canvas – One A4 page plus 750-word appendix	5-7 slides and 5-minute recorded pitch to investors on your business idea	~1000 words news article for ‘The Conversation’ on the importance of IP	~1500 words covering learning and skills development during the course
Weighting	20%	20%	20%	40%
Skills targeted	Creativity and Written communication	Oral Communication and Creativity	Written communication and Science communication	Reflective learning
Grade distribution*	As (9) Bs (3) Cs (3)	As (7) Bs (6) C’s (2)	A’s (6) B’s (7) C’s (2)	A’s (8) B’s (5) C’s (2)

*Note: only two students got As for all four assessments

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Multi/inter-disciplinary

Embedding employability in the Social Sciences

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Background

Employability development in higher education (HE) is an area particularly susceptible to policy fluctuations from a variety of sources, including government intervention, institutional drivers and subject-specific interests. The variety of case studies presented at the Advance HE 2023 Employability Symposium is testament to the innovation happening across the sector, and it is no different within our own institution and subject discipline (Moss and Kent, 2021). Within Criminology at Sheffield Hallam University, long-term collaboration with teams across the institution has resulted in a diverse employability provision for students, which was commended by the 2016 Advance HE CATE Award where the team were shortlisted as finalists. This is crucial as students prepare to enter a sector that consists of a range of employers who also work in partnership settings. The criminal justice sector employs over half a million people and includes statutory agencies such as the police and the prison service, and also the penal voluntary sector and private sector providers who support victims, witnesses, offenders and those at risk of involvement in the criminal justice system (Nixon, 2019). The criminal justice system and the organisations working within it are subject to much critique and debate, (Stout, Williams and Yates, 2008) thus we were keen to ensure that students had opportunities to interrogate current practice, as well as observing and participating. As a result, this case study, and Criminology as a discipline, can provide other disciplines with an example of how external engagement and academic rigour can be amalgamated where there are concerns about replicating or validating inadequate or harmful practice.

Sheffield Hallam University's vision is 'knowledge applied', with an aspiration to be the world's leading applied university. Although terminology such as 'applied' is contested, in our developments we adopted Lawrence-Wilkes and Ashmore's (2014) approach to applied learning, which "takes into account the moral, social, political and cultural context to enable more balanced critical reasoning and reflection for learning" (p35).

Our Criminology courses are large with around 300 students per year across three different courses (BA Criminology, BSc Criminology and Psychology and BA Criminology and Sociology). Because of the nature of the sector, with precarious funding situations, it was not realistic to solely rely on sourcing 'traditional' placement opportunities for students to enhance their employability. Additionally, our diverse student body includes over half our students being the first generation to come to university (Sheffield Hallam University, nd) and students whose personal circumstances mean that engaging in extra-curricular activities may not be realistic (eg those with caring responsibilities; financial challenges meaning that students work part time, and importantly in our sector, some students whose background could mean not passing external vetting processes). Seventy-one percent of undergraduate students come from access and participation target areas (Office for Students, 2020).

As staff who have come from practice backgrounds, we were passionate about ensuring that all students had access to opportunities to meet their diverse needs. Thus, including as many opportunities as possible within the curriculum was a vital consideration. We were also concerned to ensure that the assessment strategy for the degree provided students with authentic assessments, to support the acquisition and evidence of skills development. Revalidation provided an opportunity to identify how we could embed employability in the curriculum at all levels of study while maintaining the academic integrity of the degree, a criticism often (unfairly) levelled at employability modules.

Approach

Revalidation, which occurred in 2018 and typically happens every five years, provided an opportunity to work with employers to identify ways in which students' employability could be enhanced. This began with an away day, with statutory and voluntary employers, where we presented opportunities to be involved in the curriculum across all three courses, identifying a range of possibilities from one-off involvement (eg guest lectures), more structured engagement through developing project briefs for real world issues, through to hosting a semester-long placement. From the away day, a group of employers worked with academics to develop two bespoke simulations modules. The Criminal Justice Realities module took students through the criminal justice process from crime scene to sentence, and the Simulating Justice Practice module supported students to grapple with the "swampy lowlands of practice" (Schon, 1983) and the challenges presented for resettlement in the community of people convicted of child sexual offences. The design of these modules aligned with the QAA benchmarks for Criminology (QAA, 2022), which acknowledge the challenging and often controversial subjects taught in the discipline.

The project-based modules where employers provided problem-oriented tasks has included: working with South Yorkshire Police to produce and deliver a lesson for school-aged children to educate them about a public safety issue (such as knife crime, firework safety); and researching and presenting academic developments for public and third sector organisations (eg NACRO, StopGap Sheffield, Probation, Victim Support, LGBT Sheffield).

Finally, by embedding PDP into the students' level 6 dissertation, this has served as an opportunity for students to reflect on their learning journey and gain confidence articulating their skills and development (Beusaert et al, 2014).

Table 1 below outlines a sample of the modules, assessment methods and descriptions of activities taken at each level. Underpinning the curriculum design are core partnerships with our subject-specific employability advisor to host annual volunteering fairs, alumni events, guest lectures and paid employment opportunities for student researcher roles.

Table 1. Three examples of the modules, assessment methods, descriptions of activities, and skill development taken at each level.

Module title	Undergraduate level/typical cohort size and credit	Assessment	Description	Skill development
Real World Project Management (project-based)	Level 5 (Year 2): approx. 150-180 students 20 credits	Group presentation and reflective account	Students work in small teams to respond to a project brief provided by an external organisation. Work is undertaken on campus with defined engagement from external contacts.	Teamwork, sector knowledge development, critical thinking, presentations, project management.
Real World Professional Practice (placement)	Level 5 (Year 2): approx 30 students 60 credits	Blog, poster and portfolio	Students work four days a week for 10 weeks within a host organisation following a recruitment process. Placements can be in-person, remote or blended. They attend university one day a week for academic study and peer engagement.	Sector knowledge development and recruitment policy, critical reflection, professional relationship building.
Criminal Justice Realities (simulation)	Level 6 (Year 3): approx. 90-120 students 20 credits	Report and portfolio	Students are taught by practitioners in the criminal justice system following a fictional case study from crime scene to sentence.	Critical thinking, key terminology, application, differentiation, note taking, social, self motivation, team work.

With the above context in mind, our approach consisted of engaging with a formal, structured methodology for professional reflection, inspired by the work of Marshall, Fraser and Baker (2011) and using Schon's (1991) reflective approaches for practitioners. We have constantly reviewed our practice over the five years that these modules have been delivered, so that we may develop our approach in subsequent revalidation cycles. This includes reviewing student attainment, module evaluation questionnaire feedback and student consultative committees, and our own individual reflections on practice.

Outcomes

Students across all levels of study (including foundation year) complete assessed work to develop their employability, supplemented with extra-curricular activities. The assessment strategy of the aforementioned modules (see Table 1) includes a range of tasks to support ongoing employability, built around reflection, articulation of skill acquisition, and critiquing theory vs practice. Assessments provide opportunities for students to work as part of teams, develop project management and problem-solving skills, and hone their written and verbal communication skills. Written communication takes the guise of many styles, including academic posters, blogs, professional reports, portfolios and the creation of materials and resources for use by other organisations. The culture of employability that these opportunities help to foster has resulted in several successes. From graduate outcomes data, 97% of students from our department have progressed into work or study in 2020-21, compared with 94% in 2018-19. The number of graduates in highly skilled employment has also increased from 65% in 2018-19 to 68% in 2020-21. The approach of engaging with a range of organisations across the sector, not just statutory services, has inspired students to collaborate with charities who are taking diverse approaches to community safety. One such student was recognised by the university for their work raising money for a local knife safety charity, the student received the We are South Yorkshire [Inspirational Student Award](#). Our extra-curricular offer has also grown organically from this approach, as graduating students now return to participate in employability activities for undergraduates. We see this as the ultimate vindication of our approach, as graduates are ready to enter the workforce, use their skills to make a difference, and are engaged citizens, wanting to give back.

Following the five-year iterative process of teaching on the modules, our critical reflections on practice has led to a paper outlining three major themes which are vital to be considered when developing employability initiatives to large cohorts of students (Cadet and Griffiths, 2023). These include:

- + external engagement – ensuring reciprocity of arrangements
- + student readiness – meeting students where they are at; providing 'safe spaces' to support students to enhance their employability skills and the use of compassionate pedagogies
- + the role of academic staff – having staff buy-in is vital; resourcing issues and time for staff to be able to reflect on practice in a structured and meaningful way.

To conclude, our approach to developing employability over a sustained period of time has ensured that academic staff have continually refined our approach to engaging students and practitioners to ensure that students are able to be challenged on our courses, to consider their own self-development and be ready to articulate their transferable skills for success in a continually changing employment environment.

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Data-featured computer science programme students' KASE employability traits – MSc Urban Informatics Programme as a case study

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1. Background and context

In light of the big data spikes in contemporary urban contexts, there is a rising demand in the employment market for specialists capable of mining urban data, analysing the data, telling stories with the data, visualising the data, and perhaps most importantly, generating data-driven insights for policymakers (Li and Crowther, 2023). As such, the term Urban Informatics has been coined since the 2010s (Foth et al, 2011) to highlight data-driven problem-solving knowledge and skills for urban science practitioners. It has been interpreted by Kontokosta (2021) from the perspective of capability training in shifting modes of learning, working and decision-making; especially when leveraging novel sources of urban data into urban management and policy analysis (Thakuriah and Zellner, 2015), which denotes its multidisciplinary nature in borrowing a wide range of methodologies from multiple subjects, such as Informatics, Geography, Organisational Behaviour, Planning and Social Sciences.

The MSc Urban Informatics programme (MSc UI) was launched in 2018 at King's College London, by the Centre for Urban Studies and Progress (CUSP) London, the Department of Informatics. The design was to enable students to “study how rich behavioural data from cities and their citizens can be collected, analysed, understood, and communicated through computation”, in order to “inform improvements that can increase the wellbeing of city residents, whether by government organisations or industries involved in providing services in cities” (Li and Crowther, 2023, pp104-117). Hence the programme has a strong remit to equip students with the rounded technical, analytical and communication skills embedded in Urban Informatics towards near-future employability.

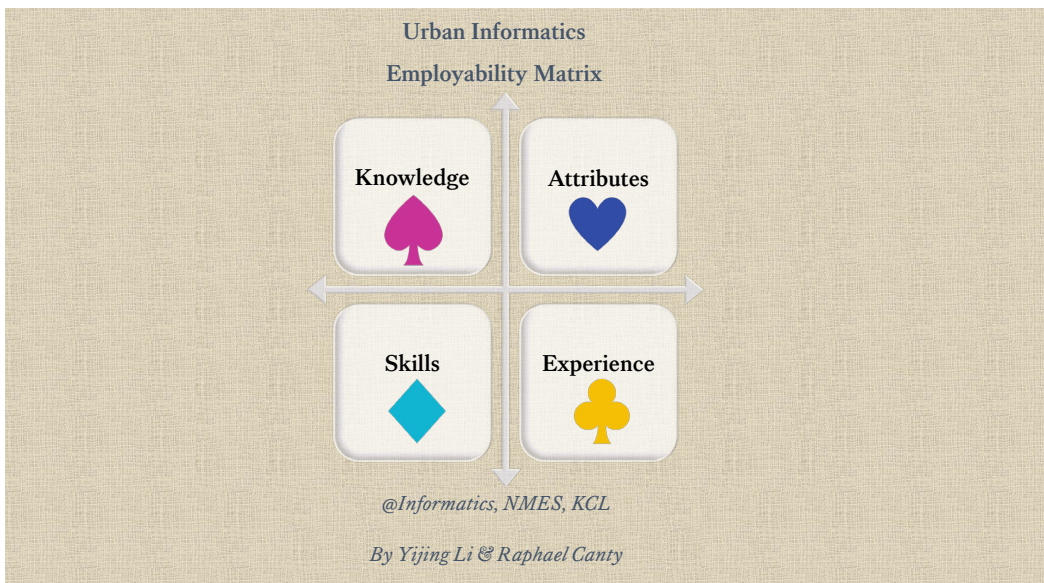
2. Objectives

To identify areas in which MSc Urban Informatics can contribute to students' post-taught-course employability, this study explored and established a subject-customised Knowledge, Attributes, Skills and Experience (KASE) model, originally designed by King's College Careers and Employability Service department, to give students a way of identifying and describing their personal resources contributing to their employability.

According to Smaldone et al. (2022), Data Science is becoming an increasingly competitive field and employers look for candidates who have an interdisciplinary set of skills, knowledge, attributes and experiences. Some subject-related models have been developed, such as Van der Heijde and Van der Heijden (2006), who propose generic competencies regarding a person's movement through their career and transitions between roles. Peters et al (2017) synthesise several domain models into an Employability Capital matrix, which contains a social category in addition to the human factors of KSA,

in addition to job-, career- and development-related employability aspects. So, the KASE model (Figure 1) builds on the widely used KSA framework (Knowledge, Skills, Attributes) by adding professional experience as a fourth element.

Figure 1. KASE model framework



Embedding employability in higher education is important because it allows students to transition to work following study, and meet the expectations of employers (Advance HE, 2019). To embed the KASE framework into the curriculum design and taught module contents, with the aim of equipping students with sufficient employability for their future career on completion of the postgraduate programme, this study developed subject-featured employability traits in the format of a 13*4 matrix, including contents to achieve following objectives:

- + the set of traits could provide students with a clear direction on how to better prepare themselves towards employment on graduation;
- + the set of traits could play the role as staged learning outcomes check points, enabling students to do self-check of their progresses throughout the education;
- + the delivery of the set of traits should be undertaken in an interesting and interactive format, which is poker card set, for students to play with, and exchange ideas or thoughts with each other on the contents;
- + the set could be played with flexible rules, leaving students players enough “space” to decide which trait(s) will be the most important for their interpretation regarding to employability.

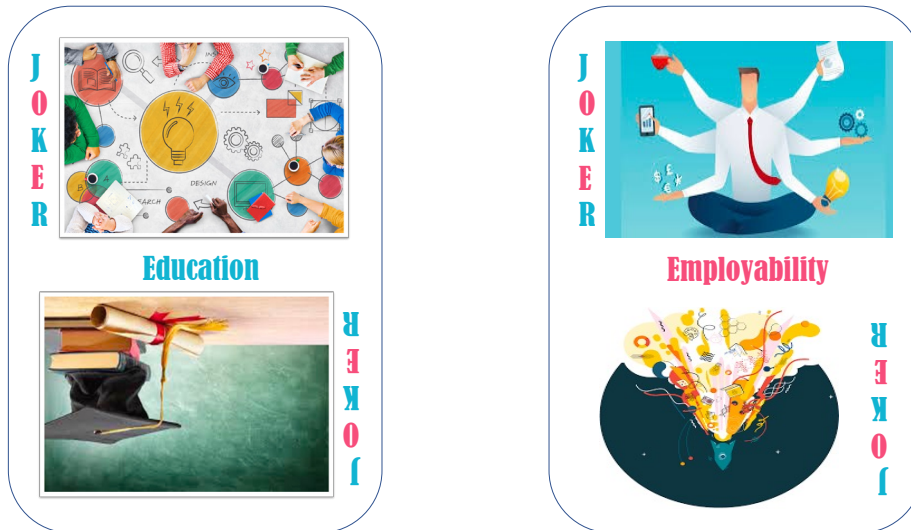
3. Method

This study involved qualitative research methods, interviews and workshops, to collect comments and discussions on students' employability traits, from both placement hosts (or line managers) and alumni points of view. Ever since 2018, this MSc programme has successfully run an annual placement module with external partners as host organisations, to provide more than 25 placement opportunities for MSc UI students. These prestigious partners range from large government bodies and international companies to small, medium enterprises (SMEs). A non-exhaustive list below provides examples of those partners:

- + Mayor's Office for Policing and Crime (MOPAC)
- + Transport for London (TfL)
- + Westminster City Council (WCC)
- + Haringey City Council (HCC)
- + Lambeth City Council (LCC)
- + British Red Cross (BRC)
- + College of Policing
- + WSP
- + Movement/GHD
- + Kami (rebranded as Kinhub).

The dedicated projects cover diversified urban data-featured topics on Transport and Mobility, Crime and Policing, Healthcare and Services, and Organisational Evaluation; with the aim of providing the students with opportunities to showcase their practical ability to potential employers, and also helping to consolidate the partnership with hosts, where the latter kindly agreed to be interviewed in relation to sharing their opinions on "*What traits are you normally looking for from an future employee*". Upon compiling the interview records into the KASE framework, a clearer subject-customised employability traits matrix was designed. This embryo traits poker set draft was then presented during a workshop event on programme-based employment sharing, between invited alumni with working experience and current cohorts, to collect suggestions for improvement and comments. The final design of this set of employability traits poker sets will also be used as a tool for educational goals, enabling MSc Urban Informatics students to self-assess the progress towards completing modules-based educational goals, in the format of 13 cards for each one of the four categories.

Figure 2. The Education- Employability Poker Cards Jokers



4. Findings

This section outlines four topics of student achievement in each area which are desirable for MSc Urban Informatics graduates and discusses how the course design emphasises them to maximise student attainment.

4.1 Knowledge



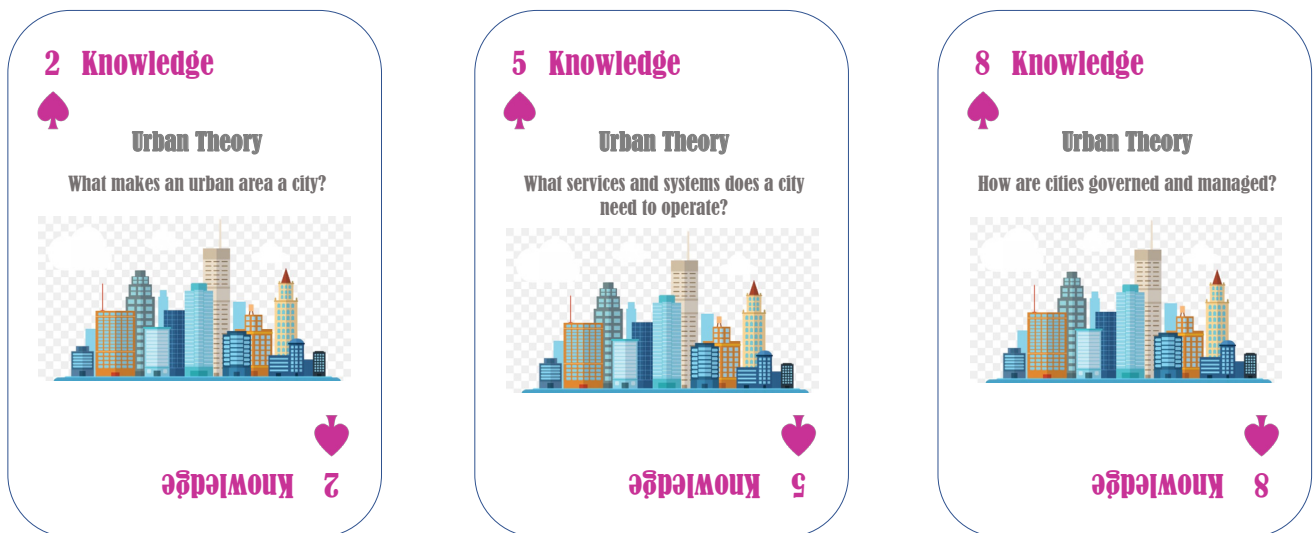
For a student seeking employment in their field of interest, knowledge of information and concepts related to that field is a prerequisite (DeFillippi and Arthur, 1994). All jobs require some level of specialist knowledge, and while knowledge related to the job is most important, the general ability to learn about a subject in depth is valuable. Data Science is a specialisation which combines Computer Science, Statistics, and discipline-specific specialist knowledge (Brown et al, 2003).

For Urban Informatics, this specialist knowledge concerns Urban Theory and mapping, hence the knowledge areas of Urban Theory, Statistics, Visualisation and Cartography are proposed.

4.1.1 Urban Theory

Particularly relevant to an Urban Informatics course is an understanding of the way Urban areas exist and develop in the world. This includes frameworks of city governance and policy, as well as systems operating within cities such as transport and local economies. Other elements of cities which may be important to an Urban Informatics career are crime networks, emergency services, housing markets and cities' effect on the physical and mental health of their inhabitants.

Figure 3. Knowledge on Urban Theory



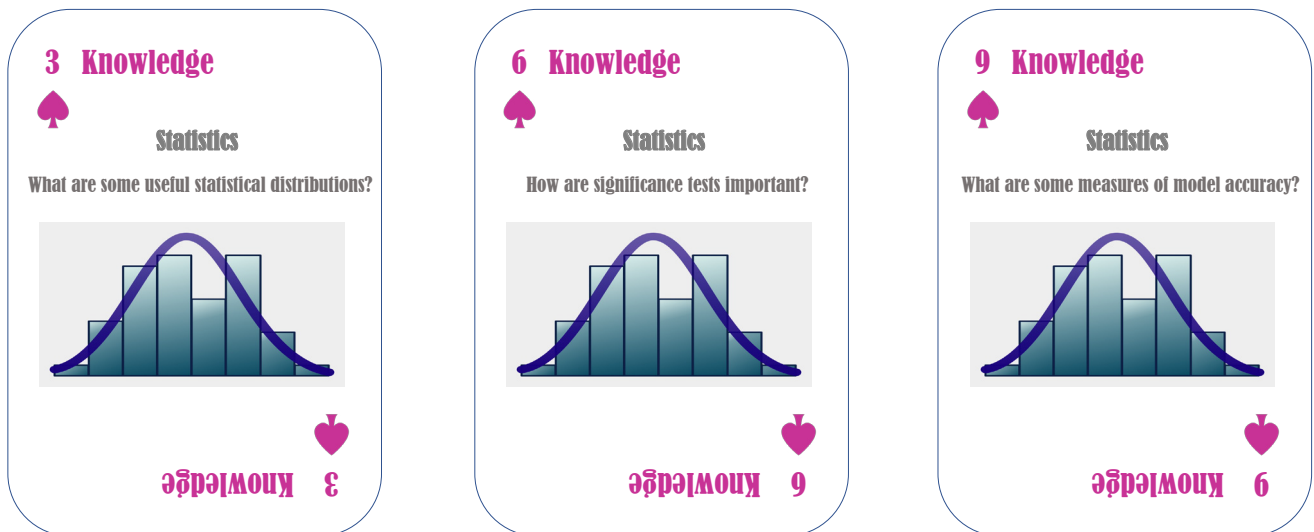
Urban Theory is taught in the MSc Urban Informatics' Introduction to Urban Analytics module, to prepare students towards professional practices through measurable indicators:

- + students can explain how cities are defined as being distinct from other urban areas
- + students can list and expand on services and systems which a city may attract or need to operate
- + students can describe how cities are governed and managed.

4.1.2 Statistics

A level of statistical knowledge is essential for Data Science activities such as clustering, machine learning, deep learning, data mining and data modelling (Smaldone et al, 2022). Applying statistical tests of significance and understanding the calculation of model accuracy are other areas where knowledge behind a process is important, ensuring students apply the correct procedure to their data and situation.

Figure 4. Knowledge cards on statistics



Statistics is taught in the MSc Urban Informatics' Statistics for Data Analysis module and expanded on in Data Mining and Spatial Data Analysis, enabling the participants with measurable abilities:

- + students can list and describe statistical distributions, such as the Gaussian, T and Chi squared distributions
- + students can explain the utility of hypothesis testing and sensitivity testing
- + students can list and describe measures of model accuracy.

4.1.3 Visualisation

An appreciation of visualisation techniques is essential when presenting information as the outcome of Urban Informatics work. This includes communication of tabular and spatial data. While the creation of visualisations can be categorised as a skill, an understanding of how data is encoded by various visualisation types and then interpreted by audiences is an important conceptual understanding. This can inform selection of an appropriate visualisation type to match both the data being visualised and its intended audience.

Figure 5. Knowledge cards on visualisation



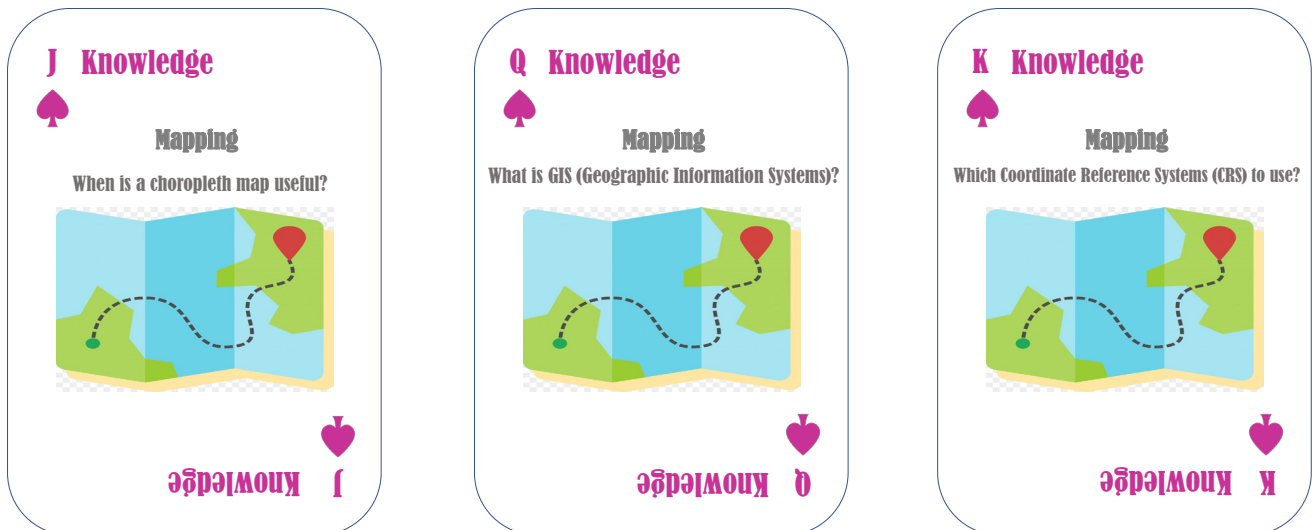
Visualisation is taught in the MSc Urban Informatics' Telling Stories with Data module emphasising:

- + students can give examples of visualisation techniques for one variable, two variables, or three or more variables
- + students can give examples of visualisation techniques for spatial data
- + students can compare visualisation types from the perspective of an audience viewing them, to suggest the best visualisation choice.

4.1.4 Mapping and cartography

Finally, knowledge of mapping theory and cartographic best practice is important for analysing and producing maps, or other geographic visualisations. This knowledge includes an understanding of the technical side of coordinate referencing systems and the theory behind how these systems are developed and used. Also useful are the attributes of a well-produced map such as information about its scale, orientation, symbology and data source.

Figure 6. Knowledge cards on mapping



Mapping is taught in the MSc Urban Informatics' Introduction to Urban Analytics module and Spatial Data Analysis module, with the aim that:

- + students can interpret and describe data presented in a choropleth map
- + students can explain the utility of Geographic Information System (GIS) software
- + students can list several Coordinate Reference Systems, explain their differences, and understand how to convert among them towards research project requirements.

4.2 Attributes



Attributes are qualities, behaviours and values which are brought to work and applied to tasks (Clarke, 2017). They reflect the way in which work is done and the attitudes one can bring to add value to a team. In literature, the element complementing Knowledge and Skills is sometimes alternatively identified as Abilities and/or Attitudes (Abbas and Sagsan, 2020). Attitudes are a semantic subset of attributes, covering the way someone thinks about their work but not their behaviours or qualities. Abilities is a superset of the other elements, concerned with the ability of someone to apply knowledge and skills together to complete a task.

The four areas of attributes identified for MSc Urban Informatics Students are Curiosity, Confidence, Reliability and Organisation.

4.2.1 Curiosity

When working with data to complete problem-solving tasks, an element of curiosity is a valuable driving force prompting exploration of the data and all tools available. This will identify the avenues available to complete the task, allowing the best solution to be identified and giving the student a good understanding of their ability to solve other tasks too. Curiosity is also crucial in ensuring that outputs are accurate and reasonable, as a curious person will ask the question “why” and check that calculated values make sense before presenting them.

Figure 7. Attributes cards for curiosity



MSc Urban Informatics encourages curiosity by exposing students to a range of data sources and providing them with a variety of tools to conduct analysis. Assessments such as the final research project and some coursework reports are designed so that students begin exploring available resources before settling on a topic they wish to research, requiring that:

- + students take initiative to explore new datasets without formal instruction
- + students search for complementary data or research material to extend a piece of analysis
- + students understand the reasons behind data trends.

4.2.2 Confidence

For students moving from academia into employment, confidence is especially crucial to them achieving their full potential in a new environment. Confident people are more proactive in completing work (Sonntag and Sychala, 2012) because they believe in their skills and thought process, needing less external reassurance. They may also be more able to move from a passive role to a more active one in a workplace, using their data science ability to persuade others and make data-driven decisions, even if outcomes are unpopular or unexpected.

Figure 8. Attributes cards for confidence



MSc Urban Informatics encourages confidence by developing students' familiarity with different types of analysis and giving them the opportunity to present their work to others, in that:

- + students are confident in their data science ability
- + students are proactive at completing work
- + students can use data and analysis as evidence to persuade.

4.2.3 Reliability

Reliability is essential for a student to be a trustworthy employee (Blašková et al, 2015). In every job there are time constraints which need to be met, so the reputation of meeting those deadlines, or being clear upfront if they are unreasonable, is valuable. Additionally, a halo effect on the rest of a team can be experienced from one team member's readily available support in answering questions or providing advice.

Figure 9. Attributes cards for reliability



MSc Urban Informatics encourages reliability by setting clear and reasonable deadlines for students to meet, so that:

- + students could complete tasks by the deadline
- + students communicate appropriately to suggest reasonable deadlines for work
- + students can help others when they're struggling.

4.2.4 Organisation

Being abreast of tasks and knowing what to prepare in advance of meetings are important parts of performing well at work. Organisations also assist in giving a view of what each hour at work builds towards, at a daily or weekly level and beyond. Just as students typically balance multiple subjects at university, so too must they often work to competing deadlines across different lines of work, making the organisational skills to coordinate this more important.

Figure 10. Attributes cards for organisation



MSc Urban Informatics encourages organisation by giving students a class schedule which requires they organise their time to prepare for attendance and coursework submission, in this way:

- + students are punctual to classes and meetings
- + students have plans for their time studying over the short, medium and long term
- + students can balance multiple tasks or projects.

4.3 Skills



Skills are the practical angle of a student's ability to perform in a workplace, whether they be job-related or career-related, hard or soft (Peeters et al, 2017). Where knowledge indicates what one knows in theory, skills refer to what one is able to do in practice. They may be categorised as cognitive, practical, communication or specialist, covering everything from the use of tools and data analytics code libraries to the soft skills of being able to present analysis to an audience.

For MSc Urban Informatics students, four branches of skills which are important are hard technical skills and data manipulation, and soft communication skills and teamwork.

4.3.1 Technical skills

An Urban Informatics graduate brings to the workplace the ability to produce analysis from data using scripting languages, visualisation tools and GIS software. Additional skills may be needed for more specialised work, but with proficiency in a programming language such as Python and relevant libraries, a wide range of work can be done.

Figure 11. Skills cards for technical skills



Technical skills are taught throughout the MSc Urban Informatics, in modules including Computer Programming for Data Scientists, Telling Stories with Data and Network Data Analysis, with the aim of ensuring:

- + students have proficiency in scripting languages such as Python and R
- + students can create visualisations using tools such as Tableau and D3.js
- + students can manipulate spatial data using GIS software such as QGIS and ArcGIS.

4.3.2 Communication

An ability to communicate complex Data Science processes to others is an important part of working in Urban Informatics. This includes being able to discuss approaches with colleagues, interpret results of analysis, and present insights to an external audience. A different style of communication is needed for delivery to audiences with different levels of technical or domain knowledge, to ensure that presented material is interpreted correctly and understood to the greatest extent possible.

Figure 12. Skills cards for communication



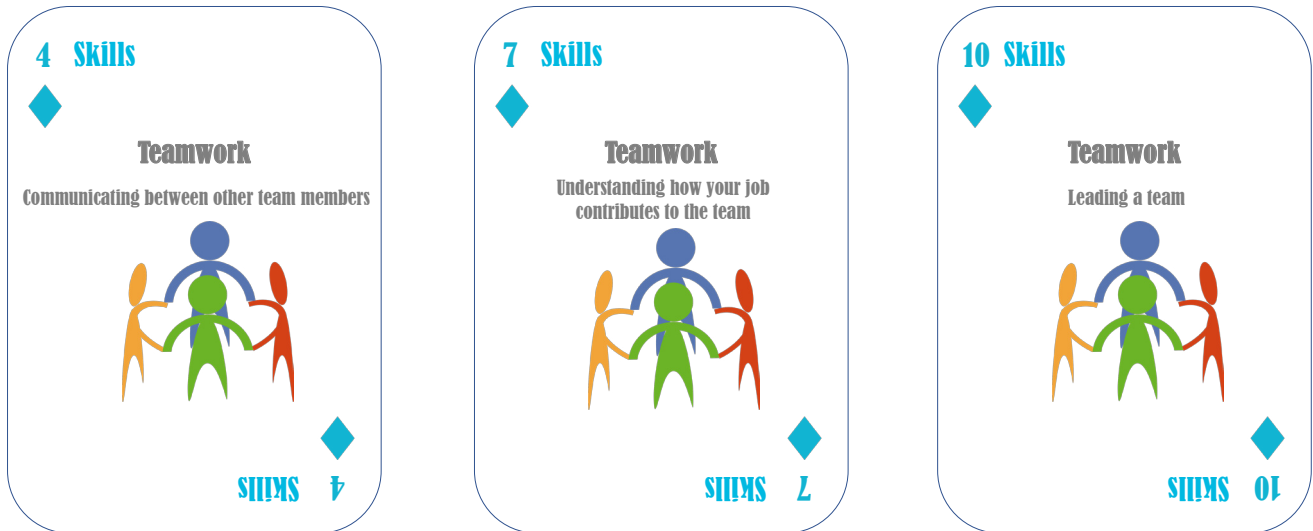
Communication skills are taught throughout the MSc Urban Informatics, in modules including Telling Stories with Data and Spatial Data Analysis, so that:

- + students can interpret the results of data analysis
- + students can put together and deliver a presentation
- + students can differentiate in a presentation to cater for technical and non-technical audiences.

4.3.3 Teamwork

While the activities involved in data analysis are often conducted alone, the ability to work as part of a team is important because individual work often contributes to a bigger goal. Soft skills involving collaboration and sharing of ideas within a team are valuable, including thinking critically about the requirements of a task and identifying areas in which each member would perform best at. It's also valuable to – where necessary – step into a leadership role, directing collaborative efforts and encouraging members of the team to do their best work.

Figure 13. Skills cards for teamwork



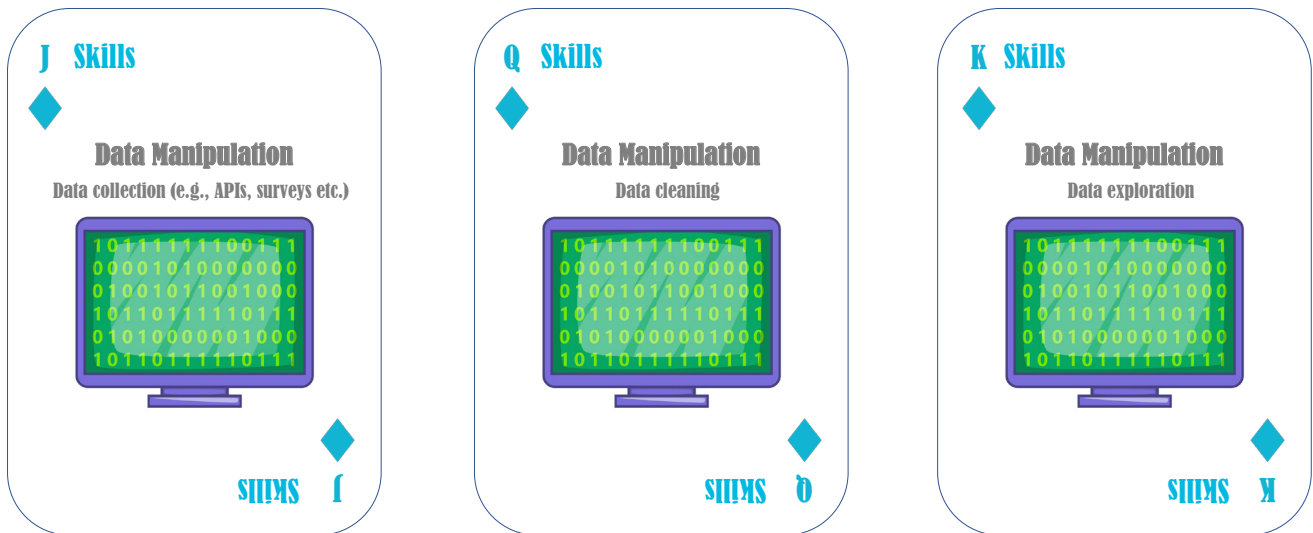
Teamwork skills are taught in the MSc Urban Informatics in the Telling Stories with Data module which includes a group coursework project, in which:

- + students communicate effectively between other members in a team
- + students understand how individual actions contribute to the success of a team
- + students can lead and inspire a team.

4.3.4 Data manipulation

One specific technical area which students should be confident in is data manipulation. This includes collecting or retrieving data, undertaking quality checks, and cleaning the data if necessary, and transforming it into a format which is suitable for analysis or presentation.

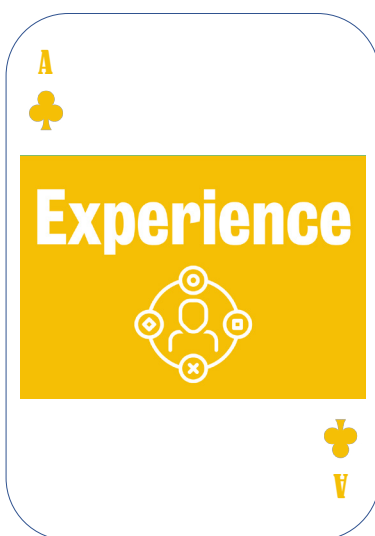
Figure 14. Skills cards for data manipulation



Data manipulation is taught throughout the MSc Urban Informatics, in modules including Computer Programming for Data Scientists, Statistics for Data Analysis and Telling Stories with Data, enabling the

- + students to collect data, for example by using APIs or surveys
- + students to clean data which may have missing entries or variables
- + students to transform data to a desired format.

4.4 Experience



Experience in positions of responsibility or situations mirroring the workplace environment allow students to provide some evidence that they can perform in a prospective job. Different types of experience are important as the classroom alone may not equip students with all the skills needed to succeed in the workplace (Business Higher Education Forum, 2017). Transferable skills which employers look for may be developed from tasks even if they were not done under conventional employment.

Sources of experience for Urban Informatics students include academics, volunteering, workplace experience and completion of personal projects.

4.4.1 Academic

At school and university, students gain the knowledge and skills they need to join the workforce. Attainment is usually measured by students' demonstration of these skills in coursework and examinations. A degree serves as evidence of a student having completed a specific programme of study and having gained the experience it is designed to give. While academic projects will not always be the same as those in a workplace, the way students approach their assessments and work with others on group tasks can be evidence as to their ability to perform in a workplace. Topics of dissertation or research projects also show students' interests and expertise.

Figure 15. Experience cards for academic



MSc Urban Informatics gives students academic experience, which is recognised by employers, that:

- + students perform well in coursework and exams
- + students gain insight into managing workload through university assessments
- + students gain teamwork experience through group projects.

4.4.2 Volunteering

Holding positions of responsibility in charities and student societies is a way to demonstrate many of the same characteristics as those of someone with a paid job. Especially in a university environment, contributing to the committee of a student society in an area of interest could show prospective employers an initiative and willingness to take on responsibility.

Figure 16. Experience cards for volunteering



MSc Urban Informatics students are encouraged to take up volunteering during their studies, and King's College Students' Union affiliates hundreds of student groups, where:

- + students hold a committee position on a student society
- + students take up a role of responsibility in a charity or local community
- + students volunteer time to support fellow students.

4.4.3 Work

Identifying transferrable skills from one position at a workplace to another is a good way to demonstrate potential in a future position of employment. For students, this could mean undertaking an internship, placement or a part-time position while they complete their studies. Engaging with professional networks such as LinkedIn can also build connections with potential future colleagues and allow an appreciation of the knowledge, skills and attributes they use in their jobs.

Figure 17. Experience cards for work



Students in MSc Urban Informatics may enrol in an optional placement module, the aim of which is to give students experience in a workplace aligned to their area of interest, through:

- + networking with professional communities like LinkedIn
- + completing an internship or industry placement
- + finding a part-time job in a field of interest.

4.4.4 Individual projects

Projects completed out of personal interest can demonstrate skills and commitment to a goal just as a formal position of responsibility do. This can include analyses conducted using public data, with results published to GitHub or another code repository to present their work. There are also professional qualifications and learning courses which can be completed to build specialist knowledge.

Figure 18. Experience cards for individual projects



Students in MSc Urban Informatics are encouraged to publish work to GitHub and have access to LinkedIn Learning through King's College London, and be able to:

- + complete in-depth research into a topic of interest
- + take online courses, such as on LinkedIn learning or Microsoft
- + publish code from personal projects to GitHub for prospective employers to see.

5. Implications

The outcomes were presented physically in the format of poker cards set, and shared with each MSc Urban Informatics student when they register at the University. They are expected to deploy the poker cards set as a tool for:

- + enjoying university education while also taking breaks to play when needed
- + setting up their own rules of play, to decide which combination of the cards will be stronger for future employability
- + being clearer about the programme's learning outcomes right from the start of the academic term, hence having clearer objectives and directions to strive for
- + being more driven by short-term and long-term employability goals shared by the expectations from real employers and experience from alumni with similar backgrounds
- + doing self-assessments for staged learning outcomes and performances, as well as the traditional formative and summative assessments set towards academic criteria.

This pilot study has also caught the attention of the academic and professional services communities in higher education. For example, the Career and Employability team is very interested in the idea, and would like to adapt the framework into a tailored sets of cards on varied programmes, if feasible. The King's Academy team has invited the author to present to university-wide for other departments' collaborations; the Advance HE employability symposium team welcomed such presentations and helped to share with other universities' groups. It inspired the team to work further on sharing this framework, and design philosophy on inclusive and interactive education with wider audiences, and considering a better visualisation project to follow up on a more sustainable mode.

Acknowledgments

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Thank you for the placement opportunities from host organisations, including Mayor's Office for Policing and crime (MOPAC), Transport for London, Westminster City Council, Haringey City Council, WSP, GHD, Kinhub, British Red Cross and College of Policing.

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Developing an employability paradigm within a discipline: a sports management case study

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Background

The discipline of sports management has evolved significantly since the introduction of the first sports management and administration degree programmes in the 1960s (Stokowski et al, 2022; Jones et al, 2008). The catalyst for this evolution has been the increasing scale and complexity of the global sports industry, driven by factors such as globalisation, technological advancements and changing societal expectations, which has necessitated a more strategic and holistic approach to researching and teaching the sport management discipline (Shilbury, 2022; Cunningham et al, 2021; Gammelsæter and Anagnostopoulos, 2022; Chalip, 2006). The sport and active leisure sector is considered a vital economic sector in the UK and across the Eurozone, with a share in the national economies comparable to agriculture, forestry and fishing combined (European Commission, 2018). Due to its perceived importance, governments and employers are now scrutinising all higher education and sports degree programmes and questioning their graduates' ability to successfully enter the workplace and impact the sector (CIMSPA, 2020; Arnott, 2022). Tensions have emerged where institutions and academics can often be conflicted with maintaining academic autonomy and perceived discipline integrity – where curricular design and research agendas are left open to institutions' interpretation and expertise – with the pressure of preparing traditional and non-traditional students with specialist knowledge and skills required for roles within the sector (Pitchford and Bacon, 2005; Aldous and Brown, 2021). Therefore, managerial workforce stability, sustainability and employability are critical in advancing the sports industry's economic, social, and cultural value and ensuring its long-term impact and relevance (Osborne and Lewis, 2022).

The rapid development in the specialist sport management discipline has evolved from a physical education focus and adopted the discourses of science and management to legitimise itself (Whitson and Macintosh, 1990). Influenced by prevailing general management disciplines, sports management is often defined as a profession, a process or activity coordination (Parkhouse, 1987; Chelladurai, 2014). However, there are concerns in contemporary sports management debate that generic management theories need to fit into the untypical context of sport (Chadwick, 2009). Hambrick and Chen (2008) argue that for a discipline to emerge, it must differentiate itself from existing disciplines or established fields by claiming that others cannot adequately address specific problems and that a specialist discipline will be of benefit (Benford and Snow, 2000). Frickel and Gross (2005) suggest that any successful discipline development comprises emergence, gaining prestige and achieving stability.

Sport management scholars have aimed to legitimise the discipline boundaries by focusing on the nature of the sport and active leisure sector as labour intensive, unpredictable in its outcomes and having a positive role in tackling social issues such as unhealthy lifestyles and social disadvantages (Chalip, 2006; Chadwick, 2009; Gammelsæter, 2021). Sport management scholars have, therefore,

repeatedly argued that the discipline needs to develop a distinct body of knowledge to demonstrate its position and value as an independent area of scholarship (eg Chalip, 2006; Cunningham, 2013; Gammelsæter, 2021). Sports management academic leaders have defended the strength and evolution of the discipline, citing that it has now built its foundations on developing clearly defined discipline networks and specialist journals, which have subsequently provided a platform to develop a sound body of knowledge and literature through rigorously reviewed research with 2,000 sport management publications indexed by the Scopus database as of March 2020 and the development of extensive global conference structures (Cuneen et al, 2004; Chelladurai, 2018; Lis and Tomanak, 2020). The number of formal sports management bachelor, master's and doctoral education programmes offered by higher education providers has also grown in epicentres such as the United States, Europe, Canada, and Australia (Stokowski et al, 2022; Cunningham et al, 2021). However, in its 60-year history, the sport management discipline is still not viewed as being fully matured, with underdeveloped research areas and blurred discipline boundaries (Dowling et al, 2014; Gammelsæter, 2021). Despite the justified importance of the role sports managers play in the sports industry, the academic discipline has lacked any coherent workforce planning, workforce development, and employability paradigm (Lis and Tomanak, 2020; Hammerschmidt et al, 2023).

This case study highlights the reflections and critical issues faced when establishing and leading a new specialist interest working group for the European Association of Sport Management (EASM) to help build a new employability and entrepreneurship paradigm for the discipline.

Approach

In *The Structure of Scientific Revolutions*, Thomas Kuhn argues that science progresses through non-linear periodic paradigm shifts, where a paradigm is a set of accepted theories and practices that guide a particular scientific community (Kuhn, 2012). The sport management discipline's evolution has clearly defined and identified research paradigms to help legitimise itself. Ciomaga (2015) has argued that sport management research displays a lower degree of convergence within the overall picture of the discipline, suggesting concentration primarily focused on areas such as management of sports organisations and sports marketing; Hammerschmidt et al (2023) add areas of convergence around the sport spectator and commercial influences.

Within the sport management discipline, the focus on workforce planning, workforce development and employability has been in a pre-paradigmatic state, characterised by a lack of clear focus or dominant theoretical framework. A patchwork of research is evident, but no clear set of principles has gained prominence for successfully explaining and solving the sports manager workforce and employability problems (Arnett, 2022; Minten, 2010; DeLuca et al, 2020). To establish a new paradigm for workforce planning, development and employability in the sport management discipline, a shared framework needed to be established to guide research and establish common ground among disciplinary scholars (Kuhn, 2012). This framework and linked activity is an opportunity to support a new normal science where discipline research can align with a new paradigm. Using Kuhn's

ideology of building paradigms, it was clear that any discipline-focused effort required persuasion, consensus-building, convergence around fundamental beliefs, and moving the discipline and broader stakeholder resources from debating issues to building new contributions and solutions to problems (Kuhn, 2012).

While Kuhn (2012) did not explicitly advocate the need for working in an interdisciplinary or transdisciplinary way to develop or shift paradigms, interdisciplinarians such as Julie Klein advocate that the crux of creativity and novel insights centred around complex problems and shifting paradigms can lie in the interaction between scholars from different fields (Bruhn, 2000). In establishing a new workforce planning, development and employability paradigm for the sports management discipline, it was essential to recognise the rich history and broad academic field of interdisciplinary ideas and theories that could be assimilated and included. According to Klein (2004), interdisciplinarity tackles broad or complex questions or problems that a single discipline cannot adequately address. It involves drawing on disciplinary perspectives and integrating their insights to construct a more comprehensive perspective.

While being cognisant of the mono-disciplinary calls by some scholars in the sport management discipline and the warnings of Costa (2005) that interdisciplinary research “is not well accepted [and tends to] ‘be marginalised’ in the sport management academy” (p129), scholars, such as Dowling et al (2014), advocate for its use as it may generate more relevant knowledge, accelerate the development of new specialised knowledge and help address the research-practice gap.

Dowling et al (2014) argue that sport management research must attend to the relevant questions and problems in the discipline. However, it should benefit from any available multiple integrated perspectives that provide meaningful insights and implications for practice.

A broad action plan was established in 2018 to develop a new discipline paradigm for workforce development, planning and employability, therefore centred on building on the history of derivative models of analysing and utilising existing theories to advance the sport management discipline (Challip, 2006) and using a clear set of actions and interventions advocated by Kuhn and Klien to move ideas from a pre-paradigmatic to paradigmatic state. This action plan included:

- + developing a comprehensive understanding of the existing discipline and interdisciplinary literature and theories
- + establish Institutional support and engage in disciplinary and interdisciplinary dialogue
- + establish a community of scholars and practitioners
- + identify core concepts and principles and create exemplars
- + develop a coherent structure and build consensus
- + develop a shared language, then test and refine it
- + document and disseminate the framework.
- + develop methodologies and research tools.

Outcomes

An action plan to initiate a paradigm shift started by understanding the historical development and prevailing theories and paradigms that influence the sports management discipline. Analysing the discipline’s dominant themes and paradigms helped identify how employability-related pedagogies are utilised and incorporated into the existing literature base. These preliminary literature reviews underpinned work leading to the development of a new international discipline working group (EASM, 2018), the development of ERASMUS+ funded bid in 2020 and opportunities to build consensus through ongoing communication and dissemination.

Table 1. Initial phases of developing an employability paradigm in Sport Management

Action phase	Activity	Dates
Initial action planning	EASM President engagement and draft proposal submitted.	2018
	EASM Board pass proposals and terms of reference for a Special Working Group on Employability and Entrepreneurship.	2018
	EASM working group Chair appointment by EASM Board.	2018
	Discipline-focused employability literature reviews.	2018
	Interdisciplinary employability literature reviews.	2018
	EASM Working Group Launch and initial scholarly debate about adapted Employability Frameworks at 27th EASM European Conference Seville (see Figure 1 and Figure 2).	2019
	EASM Working Group Chair mobilised an ERASMUS+ Sport Project Proposal and initial working group.	2019
	EASM Working Group Chair finalised and refined an ERASMUS+ Sport Project Proposal and confirmed working group to focusing on developing employability frameworks for sport management.	2020
	EACEA confirmed a working ERASMUS+ Sport Grant of €360,000 to lead the Developing Sport Managers and Leaders Across Europe Project with several disciplinary leaders and key national and international employer agencies named partners.	2020
	EASM 28th Conference Online Two thematic employability seminars.	2020
	Working Group Chair as DSMLE Project lead initiated early interdisciplinary network engagement focusing on broad range employability areas outlined in Figure 2, including ASET, WACE, ISBE, EEUK, AGCAS in preparation for project kick-off.	2020

Action phase	Activity	Dates
Development action phase	DSMLE Project kick off – including a series of thematic interdisciplinary employability introduction and advisor webinars from network leaders.	2021
	Continued refinement of a discipline-focused employability framework leading to published chapter in 2022 (Osborne and Lewis, 2022).	2021
	EASM Working Group Chair as DSMLE Project lead and partners from Strasbourg University conducted a global conceptual field-testing questionnaire study with sport management discipline academics (n=189) testing the Osborne and Lewis framework and key interdisciplinary definitions.	2021
	EASM Working Group Chair as DSMLE Project lead initiated a call for employability-based discipline examples of pedagogic cases studies – technical publication produced and shared.	2021
	EASM Working Group Chair as DSMLE Project lead co-hosted (with Ohio University) 29th EASM Conference ‘Festival of Knowledge and Learning’ one-day online conference event (during Covid-19 lockdown) focusing on employability and entrepreneurship with keynotes, expert employer and discipline leaders’ panels.	2021
	EASM Working Group Chair secured a Higher Education Funding Council for Wales national grant of £350,000 to explore the production of micro-credentials provision to develop employability for existing sport managers.	2021
	DSMLE Field research career construction studies initiated with sport management students, sport managers and executive leaders across several European countries.	2022
	DSMLE transnational meetings with project discipline leaders meeting to discuss research and case study data refining ideas and focus of discipline frameworks Cardiff, Strasbourg and London.	2022
	DSMLE national industry and stakeholder multiplier events planned and undertaken in several European countries engaging discipline and industry employers to discuss issues and data outcomes from academic and industry research.	2022

Action phase	Activity	Dates
	HEFCW micro-credential pilot project concludes with final report and successful approval of a level 4 stackable micro-credential Certificate of Higher Education in Sport Management – with continued industry engagement and input in the UK.	2022
	DSMLE Final Summit held in Leipzig University, Germany as current base of EASM. Discussion and roundtable debates with discipline leaders, employers and students aimed to refine final European Union and discipline recommendations for developing employability and entrepreneurship.	2023
	DSMLE-led online digital employability and entrepreneurship toolkit developed, launched, and housed on the EASM disciplinary network website with interdisciplinary engagement and feedback on links and resources.	2023
	DSMLE project officially closed and final DSMLE recommendation report produced: Osborne, Verschueren and Scheerder (2023).	2023
	EASM Working Group Chair, DSMLE and HEFCW Project Lead secured a Knowledge Transfer Partnership bid of £212,000 to work with CIMSPA in operationalising several DSMLE Project recommendations in the UK.	2023
	DSMLE and HEFCW micro-credentials outputs, findings and recommendations officially presented in a dedicated Employability and Entrepreneurship Track Theme at the 31st EASM International Conference in Belfast.	2023
	EASM Working Group 2023-2028 action plan and refreshed terms of reference with consolidated employability framework, common language, and actions to continue working with interdisciplinary networks presented to EASM board for approval.	2023
	DSMLE and HEFCW project dissemination actions initiated with journal submissions and discipline textbook proposals pending.	2023
	Working Group Chair, DSMLE partners and new organisations exploring new ERASMUS+ Sport bid to initiate research activity in key DSMLE recommendation areas.	2023

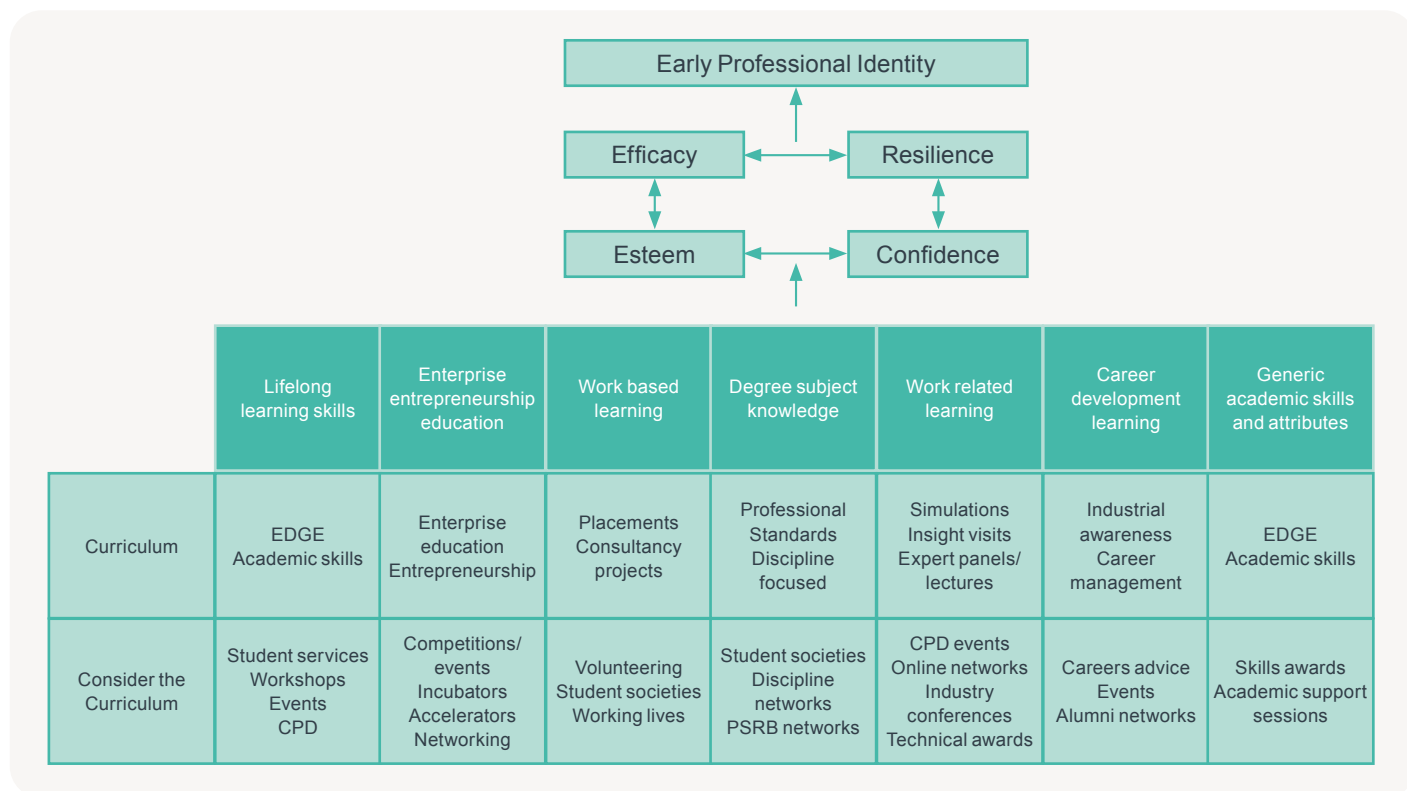
Initial action plan phase 2018-20

In acknowledging the importance of institutional support in any paradigmatic development, it was necessary to advocate the importance of the employability agenda and establish institutional backing to legitimise its importance and have symbolic support for any ongoing work or projects. The priority for approaching the President of the European Association of Sport Management (EASM) in late 2018 was to explore the appetite for developing a dedicated international working group bringing together experts from within the discipline who had a joint interest in raising the profile of employability and begin to develop a clear paradigm for the discipline. The network president sanctioned and supported the initiative, and a working group terms of reference document (Osborne/EASM, 2018-23) was constructed with the Kuhn and Klien paradigmatic process in mind. The EASM Employability and Entrepreneurship Working Group (EASM, 2023) was formed in 2018 with the original aim of developing employability, enterprise and entrepreneurship frameworks to assist the career development of future and existing sports managers (paid and voluntary) across Europe by supporting EASM members and the EASM board with the creation of relevant resources and dissemination of best practice, including:

- + establishing a common language for developing employability and entrepreneurship
- + the monitoring of sport management labour market trends in Europe
- + identifying employment and career structures within the sport industry across Europe
- + involving employers in discussing sport management curricula and research agendas
- + working with professional support services (eg careers) to enhance curricular delivery
- + enterprise and entrepreneurship education
- + career development learning
- + work-based learning (eg placements/internships)
- + work-related learning (eg simulations, field study, insight visits)
- + curricular, co-curricular and extracurricular innovation.

After 12 months of discussions with the EASM board, the discipline working group was launched in Seville in 2019 at the annual European Association of Sport Management conference. The launch session outlined the focus and rationale for the working group while engaging in initial discipline consultation (Figure 1) about the scope of employability based on initial literature reviews (Osborne, 2019). The launch stimulated interest, discussion and debate. It resulted in identifying a group of colleagues interested in pursuing collaborative research projects to accelerate work around this agenda and ideas that provided a focus for further research exploration.

Figure 2. Adapted Model of Employability (Osborne, 2017; Osborne, 2019).



Development action phase 2020-23

Through the launch of the international EASM working group, several senior discipline academics and institutions emerged from the European network to support its ongoing focus and development. An ERASMUS+ Sport Collaborative project funding round was identified as an opportunity to stimulate and accelerate the development of an employability paradigm for the discipline. A bid was constructed from the early literature reviews and engagement, and a coalition group led by Cardiff Metropolitan University and including several universities, employer organisations and the discipline institution EASM successfully secured €360,000 to further the work and focus of this work. The ERASMUS+ Sport project Developing Sports Managers and Leaders Across Europe (DSMLE, 2023) aimed to develop nationally meaningful and European-wide guidelines and policy recommendations on how to plan, deliver and embed employability frameworks in sport management to develop an effective and sustainable workforce to continue to govern and run a sport industry that promotes economic development and health-enhancing physical activity and social welfare across Europe.

The project enabled a dedicated approach to implementing the next phase of the identified paradigmatic building action plan. The project team completed best practice research studies to explore how employability, career development, enterprise skills and entrepreneurial intentions could be developed. In establishing a clear sport management workforce and employability paradigm, the discipline acknowledged and engaged with the existing theories linked to workforce planning (the process of analysing, forecasting, and planning workforce supply and demand [eg Drury et al, 2009; Bechet, 2002]), workforce development (understanding the systems and approached that equip individuals with the necessary skills and knowledge [eg Zaber et al, 2019]) and the contested employability literature dominated by higher education and workplace views of developing interventions and education (Römgens et al, 2020). A formal employability framework was developed (Osborne and Lewis, 2022). During the project lifecycle, the concepts in this framework were tested using a conceptual field-testing methodology (Howie and Bagnall, 2016) with the project team engaging the presidents of the global sports management discipline institutional network organisations in Europe, Australasia, Africa, and North and South America to promote the project and engagement in the research. The conceptual field study survey of over 187 global academics highlighted that the discipline could feasibly adopt a broad range of employability concepts. However, their use in discipline practice varied widely (Osborne et al, 2021). Having a sound benchmark of global sports management discipline attitudes ensured that the DSMLE project team could initiate online interdisciplinary discussions inviting scholars from varied employability disciplines, such as enterprise education and work-based and placement learning, to share insights, provide advice and offer contemporary frameworks to help create a diverse pool of ideas and potential research methodologies. To consolidate this stage and the Osborne and Lewis (2022) framework, the project aimed to establish good practice discipline-specific exemplars crafted through the insights provided by interdisciplinary engagement. A compendium of discipline case studies was developed to help consolidate the proposed employability framework and stimulate innovative thinking (Osborne and Mischeler, 2022). These case studies and further interdisciplinary data collection and research supported the development of the Sport-EMP digital toolkit (EASM, 2023).

The digital toolkit was developed to help document and communicate the project's success, celebrate the existing practices within the discipline, and stimulate capacity building and further focus on a new paradigm for the sport management discipline. The EMP-Sport toolkit includes digital guides, e-resources, recorded webinars and support videos and is available via the public-facing EASM website to benefit all global sport management academics. A specialist online EASM festival of knowledge event was co-hosted and organised between Cardiff Metropolitan University and the University of Ohio during the Covid-19 pandemic, showcasing the DSMLE project progress (Osborne, 2021) and offered a platform for academics to share connected research and facilitated employability-related panel discussions by discipline leaders. As the DSMLE project funding cycle finished in 2023, part of the funding exit strategy included handing over the ongoing development of the EMP-Sport Toolkit to the EASM Employability and Entrepreneurship working group for institutional ownership, and the project outcomes were celebrated in the EASM 2023 Conference through an extended workshop (Osborne, 2023). The DSMLE project also developed comprehensive policy

recommendations for the European Union and national governments, sports industry leaders and sports management discipline leaders (Osborne et al, 2023). This policy document was constructed from the interdisciplinary, transdisciplinary and disciplinary discussions and additional field research to establish benchmarks that will help to facilitate and normalise a workforce planning, development and employability paradigm with sports management discipline.

Conclusions and ongoing work

The EASM Employability and Entrepreneurship working group has now developed a 2023-30 action plan based on the recommendations and benchmarks included in the Osborne et al (2023) policy recommendation report and will include ongoing development of the EMP-Sport Toolkit, further communication and dissemination through journal and textbook creation, ongoing inclusion in European and global discipline network conferences, further research and grant funding, and interdisciplinary collaborations to explore the capacity building of existing academics, and training new academics to undertake employability related research and pedagogic practice. While Kuhn and Klien may argue that this work is still in the phase of creating a normal science for workforce planning, development and employability in sports management, the discipline leadership group has endeavoured to build critical momentum, maintaining a balance between practical action steps and with the opportunity to engage and assimilate and debate interdisciplinary concepts and transdisciplinary views. The next phase of work will enable the sports management discipline to consolidate new relationships with interdisciplinary leaders and networks and continue to test and evolve ideas and theories that can fit the unique context of sport.

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Interdisciplinary translation: how students from three schools have taught each other the same content from their discipline's perspective

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Background

It is generally accepted that professions, such as those in healthcare, are delivered in practice by multi-professional teams (Academy of Medical Royal Colleges, 2021). The experience of working in these teams develops shared knowledge and teamwork skills. Perhaps more importantly though, the exposure of team members to different perspectives allows an insight into other cultures and experiences, and accordingly fosters a greater empathy (Dale et al, 2023). Given the importance of interdisciplinarity, the challenge for universities is how to develop this skill organically in students.

The nature of the educator team interaction within the community can differ subtly but distinctly (Stember, 1991). For example, cross-disciplinary education would simply involve the perspective of a discipline from the viewpoint of another, or others. Whereas multidisciplinary education involves collaboration of disciplines to achieve the learning outcomes, and where this collaboration becomes formally structured the education becomes interdisciplinary. Interprofessional education occurs when the collaboration is between professionals of each discipline. True interdisciplinary education also values the input of non-professionals with a discipline. In medical education, a good example of this would be the involvement of patients (Dale et al, 2023).

Across a traditional degree programme, students are already exposed to a variety of staff specialisms and departments, primarily because of their individual module choices. However, this often occurs in discrete, single-discipline silos. For example, on Tuesday, the cohort might study anatomy, on Wednesday, they might debate sociology, and on Friday, they might learn ethics and law, but their learning experiences still take place in homogenous groups, directed by staff. For many, their first exposure to true (and independent) interdisciplinarity will be either when they are on placement or post-graduation.

The present case study was developed to address this potential gap. Indeed, this is particularly important at Aston University, as our student composition is broadly reflective of the demographics of the local community. Specifically, our student groups are:

- + Asian or Asian British (46.24%)
- + White (31.71%)
- + below 20 years old (87.46%)
- + have declared a disability (10.32%)
- + from a low household income background of £42,875 and below (47%)
- + from a low household income background of £25,000 and below (37%)
- + female 47.2%, male (52.8%).

For the past five years, an interdisciplinary team within Aston Law School (ALS), Aston Pharmacy School (APS) and Aston Medical School (AMS) at Aston University have worked together to co-deliver material to students. The teaching team has blended ethicists, practitioners and academics with shared values and goals. While the students have still been taught separately within their respective degree programmes, they have also been paired with their contemporaries from other schools to share their discipline-specific perspectives with each other outside of the classroom setting. The overarching theoretical framework within which this is based has been developed according to Bruner's constructivist spiral curriculum model (Bruner, 1960) with encouragement and nurturing of experiential communities of practice to emphasise the social nature of learning (Farnsworth, Kleanthous and Wenger-Trayner, 2016; Cruess, Cruess and Steinert, 2018).

The constructivist approach is particularly suited to interprofessional education (Hean, Craddock and Hammick, 2012). This has helped to translate the technical concepts through their lived experiences. The net effect of this is the creation of an interdisciplinary community of learners. By pairing students with peers from other departments, the students are provided with a safe space to explore concepts and experiences. This intervention helps to reduce any structural or cultural inequalities, from students who may not have previously been exposed to other cultures or disciplines (Bourdieu, 1984). The peer nature of the communication allows students to communicate in the way, and pace, that they feel most comfortable, supported within an academic structure. This has helped to instil greater confidence and mutual respect for each other's roles and responsibilities beyond their own professional knowledge and identity.

What has been critical to the success of this intervention has been structuring these shared experiences as a fully integrated part of their studies – whether this is the real-life scenarios in teaching or through the production of an individual research artefact that reflects their personal experiences.

Approach

This interdisciplinary education (IPE) project on Medical Ethics and Law (MEL) was a collaborative effort between academic lecturers and teaching fellows from AMS, ALS, and APS. The project's objective was to promote learning and collaboration among students from different professions. This will prepare them for the real-world, interdisciplinary work environment while aligning with the shared learning outcomes of each school. This work also aligns with recent regulatory policy within the respective sectors. In particular, the General Medical Council's Outcomes for Graduates (GMC, 2018), the Quality Assurance Agency for Higher Education's Subject Benchmark Statement for Law (QAA, 2023), and the General Pharmaceutical Council's Standards for the Initial Education and Training of Pharmacists (GPhC, 2021; see **Figure 1**).

Figure 1. Summary of AMS's, ALS's and APS's MEL curriculum, learning outcomes and outcomes for graduates.

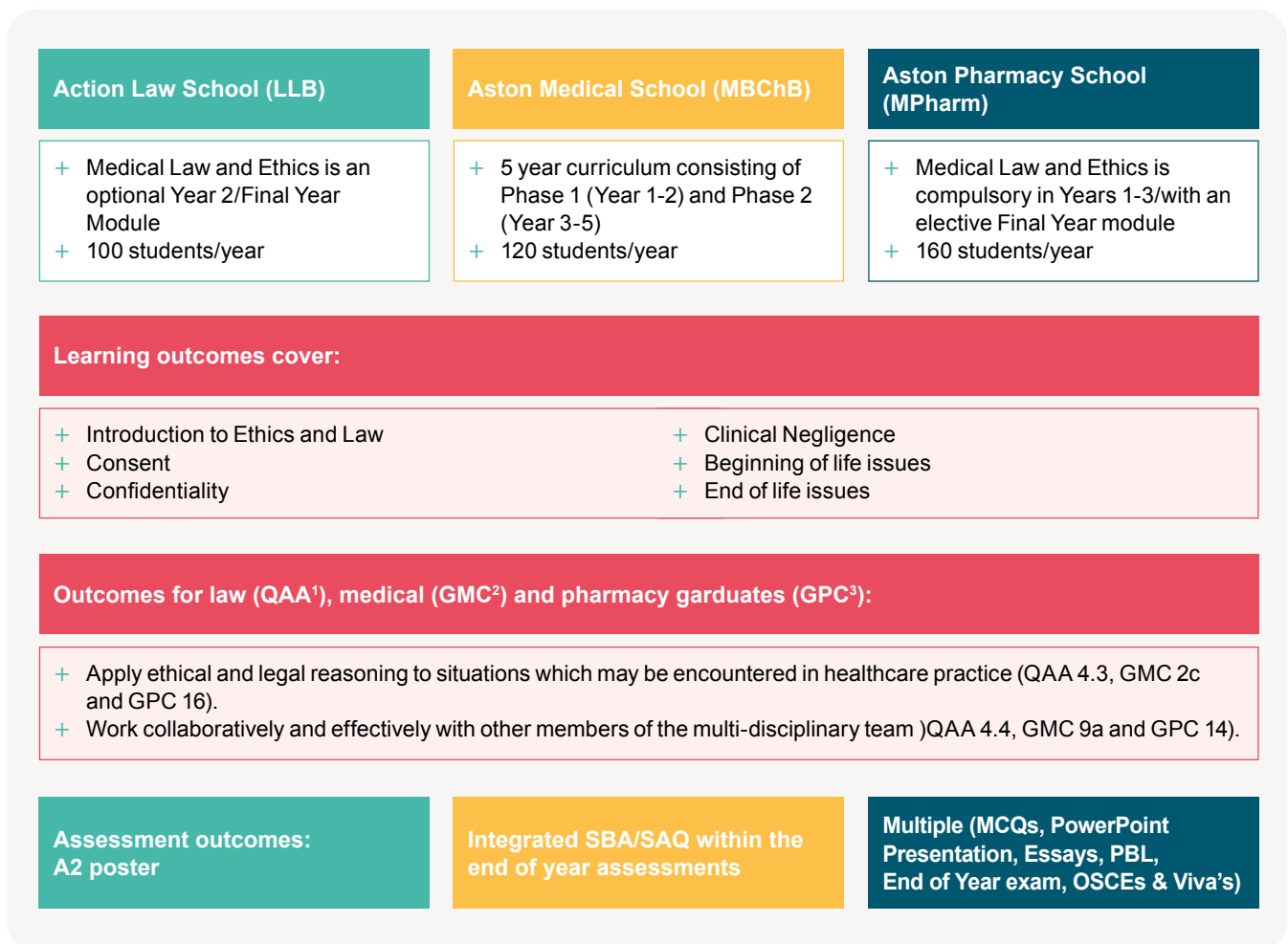


Figure 2. Practical timeline of how the intervention occurs

AMS-ALS poster presentation

The IPE project between AMS and ALS was developed to foster teamwork and interaction between approximately 120 first-year medical students and 100 second-year law students concurrently undertaking the MEL module during Teaching Period 1 of the academic year. This collaborative project has been running for six years.

At its core, this IPE project aimed to facilitate peer-led discussions between randomly paired AMS and ALS students on a chosen MEL topic. These discussions provided a platform for sharing professional perspectives, allowing students from both schools to contribute their unique viewpoints obtained from their placements, personal experiences, tutorials and lectures. For this project, the students took the initiative to reach out to one another and coordinate meetings in their own time. This allowed them to develop essential leadership and time management skills.

The assessment outcome of this collaboration was the creation of an A2 poster summarising the key points from the peer-led discussions (See **Figure 3** and **4**). This poster served as a summative assessment for Law students, with Medical students contributing their knowledge and insights related to the MEL topic. For the medical students, while their involvement was formative, it did contribute to their personal IPE record. This entire process was overseen by ALS academic lecturers and AMS clinical teaching fellows, who provided guidance on the task and addressed any issues during the project.

Figure 3. Summary of the AMS-ALS IPE project process

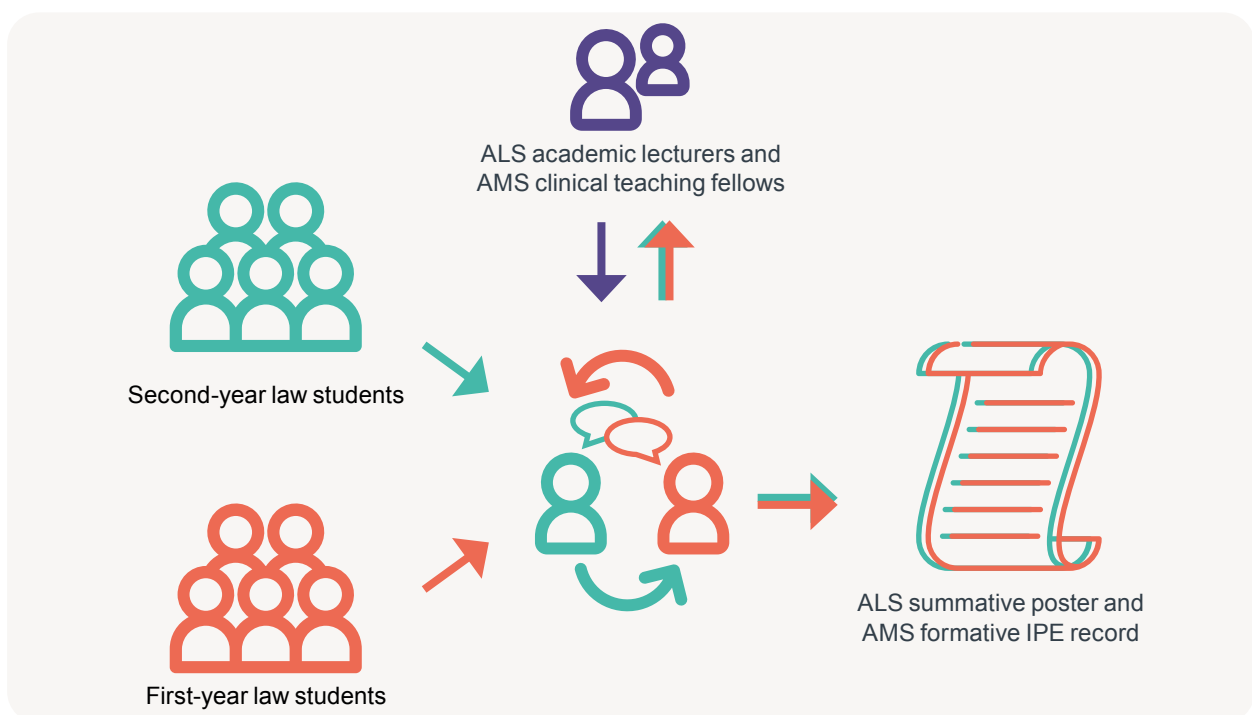


Figure 4. An example of the AMS-ALS poster presentation (see separate PDF file)

DEFLECTION REJECTION

By Tahira Begum
AMS: Sarah Ileyet

Theme 1: 'Do the rights of a parent trump the rights of a child?'

INTRODUCTION

The Abortion Act of 1967 governs the legality of abortions. It permitted safe and legal terminations of pregnancy by a registered practitioner (s 1)(1)(3), as seen in *Royal College of Nursing of the UK v. DHSS* [1981] 143, but was subject to certain conditions (2). It required that termination only be performed at a registered clinic or hospital (s 1)(3)(b) and two medical practitioners must agree on the grounds of the abortion in good faith (s 1)(1)(7). As seen in the case of *MS Trust v. A, B, C and A Local Authority* [2014] 18, the continuation of her pregnancy would involve a risk to her mental health, thus termination was permitted. Under the *Abortion Regulations 1991* (8) all abortions must also be notified to the authorities.

As a result of the amendment made by the *Human Fertilisation and Embryology Act 1990* (10), an upper time limit of 24 weeks was introduced for the first ground for abortion. It also allowed terminations, that exceeded 24 weeks in cases of serious foetal abnormalities (s 1)(1)(6)(11) in this case, hydrocephalus.

Since a father's 'rights in abortion aren't recognised', (12) there are arguments and ethical approaches that suggest that the mother's right should not be able to override the rights of a child, such as the *Infant Life (Preservation) Act 1959*, (13) which discusses the capability of a foetus being born alive, as well as many religious views. However, there are many arguments that suggest that the mother's rights trump the rights of a child, such as the Best Interest Test, the *Abortion Act 1967* (14) or the *European Convention on Human Rights* (ECHR) (15). This raises the ultimate question:

DO THE RIGHTS OF A PARENT TRUMP THE RIGHTS OF A CHILD?

WHAT IS CONGENITAL HYDROCEPHALUS?

Hydrocephalus refers to the abnormal accumulation of cerebrospinal fluid (CSF) within the brain, resulting in increased intracranial pressure which can cause tissue injury and irreparable brain damage (1). Congenital hydrocephalus is a type of hydrocephalus that is present at birth. This condition can often be detected during pregnancy through ultrasound screening. While there are treatments such as surgery to drain the excess fluid and relieve the pressure on the brain, the child will more often than not experience long-term complications.

LONG-TERM SIDE EFFECTS:

- Short lifespan
- Memory problems
- Learning disabilities
- Vision problems
- Speech problems
- Epilepsy (2)

WHO HAS THE BETTER INTEREST?

As discussed in the *Mental Capacity Act 2005* (s 4)(1)(6) the person making the decision must take into account all the relevant circumstances. In this case, it's the two practitioners, as seen in *D v. South* (17), who must make a decision in good faith and consider the outcome in the best interest. The *Best Interest Test*, in the context of abortion, can be used to determine whether or not an abortion should be allowed. It takes into account the severity of the foetal abnormality, the likelihood of the foetus surviving, and the potential risks to the mother's health. From the case of *Crowder and Others v. Secretary of State for Health and Social Care* [2022] (18) it can be argued that the authorisation to be able to terminate pregnancy based on a serious foetal abnormality can be in the best interest of both the mother and child. Whilst it is possible for a foetus to survive with hydrocephalus (9), children should receive the neonatal support that is in their best interests. In a no-choice situation, sustaining life would be inappropriate. In a no purpose situation, it may be unreasonable to expect them to bear (20)

CASE STUDY: 'LET'S TALK ABOUT RISKS'

As developed in *Bolton v. Hospital Management Committee* [1957] 211, the duty of care requires doctors to take reasonable care and skill in treating their patients. Doctors have a duty to inform patients about all relevant information, even if this means excluding information about risks. This Bolam principle does not, however, provide a sufficient justification for doctors to withhold risk from their patients. As decided in the *Montgomery v. Lanarkshire Health Board* [2015] 322 case, a doctor has a responsibility to use reasonable care to make sure that a patient is aware of any significant risks and benefits of a suggested course of treatment. This, therefore, suggests that a woman considering termination on the basis that her child has hydrocephalus must be provided accurate and comprehensive information about the potential risks and benefits of the procedure, as well as information about alternative options such as adoption or continuing the pregnancy. The patient should be able to obtain and understand this information, and it should be given while taking into account their particular circumstances and beliefs (23). This links to the idea of who is making the decision—the mother. Article 8 of the *Human Rights Act 1998*, incorporating the ECHR (24) suggests the right to privacy. As seen in *Roe v. Wade* [1973] (25) the right to privacy includes the right of a woman to make decisions about her own body. A woman may choose to have an abortion until a foetus becomes viable, supporting the argument that a parent's rights trump the rights of a child.

PRO-CHOICE VS PRO-LIFE

PRO-CHOICE

Women have the right to choose what happens to their own bodies and should have the right to make decisions about their own reproductive health. Forcing a woman to carry a pregnancy to term against her will is a violation of this and can have serious physical, emotional, and financial consequences. (5)

If a woman believes her child will grow up to have a difficult life due to their abnormality, she should be able to make an informed decision in the child's best interest.

Legal access to abortion is necessary to prevent unsafe and illegal abortions that can put women's health and lives at risk. (51)

Foetuses are not yet fully formed human beings and do not have the same rights as fully formed human beings (52)

PRO-LIFE

Every life is valuable and should be protected, including the life of a foetus. Abortion is therefore morally wrong (53)

The value of foetal life, if it begins at conception, an embryo or foetus is a human being with a right to life, and abortion is equivalent to murder (54)

Some argue that prenatal testing and selective abortion reinforce negative attitudes towards people with disabilities and contribute to a culture of ableism, in which people with disabilities are devalued and discriminated against (55)

Wouldn't adoption be a better option than abortion for women who are unable to raise a child? (56)

RELIGIOUS TAKES ON ABORTION

ISLAM

In Islam, abortion is not permitted unless the circumstances deem it necessary. "Life is made sacred by Allah and taking a life is haram." Unless the soul enters the foetus, an abortion can occur for valid reasons. Similar to Judaism, abortion can be done if the mother's life is in danger, even after ensoulment, since the mother is the original life source, it would be the lesser evil to sacrifice the foetus. Abortion is also legal in Islam when a foetus is severely deformed and will have a terrible quality of life. (43) Therefore a mother may be permitted to carry out an abortion if her foetus suffers from hydrocephalus.

JUDAISM

Like Islam, Judaism also places a high value on life and only accepts abortion in instances where the mother's life is in danger, impregnation due to adultery or rape, or in cases where the foetus will be born with a severe deformity (44) Hydrocephalus causes many complications that all lead to bad quality of life, and since the mother's life would take precedence, it can be argued that the mother's rights will trump the child's rights.

CATHOLIC

The Roman Catholic Church, on the other hand, considers those who have a complete abortion to be automatically excommunicated (45) Abortion at any stage of pregnancy is a form of unjust homicide (46). Their view on abortion can be suggested to link to the idea that the parent's rights do NOT trump the rights of the child as to do so is a great sin. They place great importance on preserving life and even in cases where the unborn child suffers from a disability, possible abortion is still opposed.

THE BEGINNING OF LIFE

Some believe that the moment of conception, when the sperm fertilises the egg and a new genetic combination is created, marks the beginning of life. (26) The pro-life movement and those who oppose abortion are frequently linked to this point of view.

Others argue that life begins at the point of viability, when the foetus can survive outside the womb. (27) This links with the *Infant Life (Preservation) Act 1959* (28). If the child is capable of being 'born alive' and surviving outside of the womb, continuing with an abortion may be seen as an offence.

Some argue that life begins when the foetus develops measurable brain activity, which is typically around the 24th week of pregnancy (29). This view is often associated with those who believe that abortion should be legal but subject to certain restrictions.

Finally, others argue that life begins at the moment of birth, when the foetus becomes a fully-formed human being with a separate identity from its mother (30). This view is also associated with those who support a woman's right to choose.

RIGHTS OF A FOETUS

PERSONHOOD APPROACH: It can be argued that the foetus should be granted legal personhood from the moment of conception, as this is where life begins, and therefore should be granted the same rights as any other human being. Since a sleeping person does not cease to be a person because they are not currently using their capacities, it is the potential to use them that gives the person's life value. So too with the foetus (33) the mother's rights, therefore, would not be able to trump the rights of the child, as they have their own rights that would be protected under ECHR Article 2 (38)

GRADUALIST APPROACH: This approach argues that the foetus becomes more and more physically differentiated from her and gives rise to a gradual psychic differentiation. With the physical and psychic differentiation usually accompanied by an increasing emotional attachment of the woman to the foetus (37), the foetus develops more rights and an increasing measure of respect until it reaches the status of a person (38) Dworkin, however, opposes this idea and claims that "[her] foetus is her responsibility and of her and is hers more than anyone's" (39) Again suggesting that a foetus does not have rights and that it is the mother's choice if she wants to terminate the pregnancy.

BODILY AUTONOMY APPROACH: This approach links to those who support a woman's right to choose. It emphasises a woman's right to make decisions about her own body and healthcare. "Foetuses are biologically dependent on a pregnant woman and will be physically and socially dependent on her after birth. As a result of this, it is therefore her moral right to decide whether to keep it." (40) As seen in *Vo v. France*, (41) the unborn was not considered a 'person' that was protected under Article 2 of the ECHR. (42) Any rights the unborn would have would be limited by the interest of the mother. This supports the argument that the parent's rights do trump the rights of a child since a foetus has no legally protected rights.

ALS-APS video recordings

From the 2023-24 academic year, this project will be extended to include similar interdisciplinary linkages between ALS and APS. What has previously been challenging is that the two cohorts have traditionally been taught in different teaching periods. This has therefore necessitated a more creative approach to overcome this issue. We therefore extended the linkages between schools across both Teaching Periods 1 and 2 but centred around the submission of asynchronous video recordings on a chosen MEL topic.

During Teaching Period 1, Pharmacy students will lead by creating an in-depth educational video recording that explores their chosen MEL topic. In Teaching Period 2, these educational videos will be shared with Law students. The second-year Law students will then create their own video responses, sharing their perspectives and viewpoints on the MEL topic. These will then be shared with the Pharmacy students, thereby kickstarting the cycle again. This will allow IDE to take place both synchronously (with AMS-ALS) and asynchronously (with APL-ALS). If successful, this will then provide an appropriate model for further expansion.

Outcome

The IDE Project between AMS, ALS and APS aims to teach students the core Medical Law and Ethics principles within their own schools. What makes it special, though, is that it also provides students and staff with the opportunity to partake in interprofessional education. It is these opportunities that will allow students to get a more enriched learning experience. Indeed, the students are able to demonstrate the application of the law in their field and successfully communicate this to their peers from the other disciplines, whether this is in a synchronous or asynchronous format. This IPE allows students to appreciate other perspectives and gives them an opportunity to learn about how other professions deal with and apply medical law to their own practice.

In informal discussions with ALS students on the MEL module, comments regarding the IPE project have generally been positive, with some students likening the collaborative aspect of the module to work that lawyers in practice may be required to do.

ALS Student #1: “At first, I was sceptical about working with a Medical student, but it turned out to be a fantastic learning experience. It felt similar to how a lawyer might work with an expert witness in the real world.”

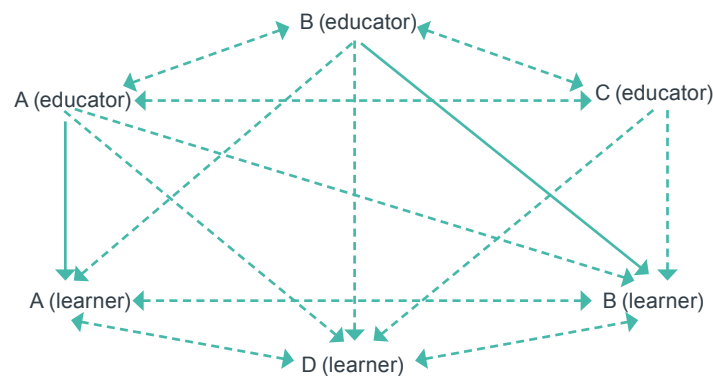
ALS Student #2: “I used my AMS student contact to add depth to my assessment. I was able to add comments in about the efficiency of different medical practices to blend the law and medicine topics together.”

AMS Student #3: “It [this experience] helped me to better understand legal principles.”

AMS Student # 4: “The Law student’s ideas made me think about certain ethical situations and how I would apply them.”

Understandably, there are some challenges that present in scenarios where students are expected to engage in interdisciplinary projects. However, these challenges have been overcome by encouraging students to communicate openly about their availability and needs, in order to reach a shared understanding of the content. In module feedback, Law students have made it clear that they value the opportunity to work with peers in other disciplines and over the past five years, the optional module has nearly tripled in size from 50 to 145 students. While this IPE Project involved Medicine, Law and Pharmacy, the general principles can be similarly applied to other disciplines. The task of effectively incorporating IPE requires efficient management by course coordinators. In general, individual professions’ confidence in educational competence tends to be high where teaching involves an educator who is teaching learners within their own profession. However, the practice of IPE is most effective when both the educators and learners from different professions come together to create an active learning experience (Burgess et al, 2020). This creates a more complex scenario closer to that of **Figure 5**.

Figure 5. Educators from professions A, B and C teach learners from professions A, B and D (Browne et al, 2021)



In this simplified model, educators from three different professions are educating learners from three different professions. Through the complexity of this educational design, the inherent risk to authenticity and identity becomes evident. While there may be respect and acceptance of the educational competence within each professional group, team respect or shared learning objectives cannot be automatically assumed. In particular, it is essential to avoid falling into the trap of only discussing or prioritising your discipline's view on the topic. To avoid this, it is important to develop a shared language, terminology and resources. A peer network or community of practice would also be valuable here. Indeed, this interprofessional respect is the glue that sticks learning and teaching teams together so that they can operate effectively. Sharing expertise and gaining a better understanding and awareness of each other's roles, responsibilities and limitations, will also support the design and delivery of innovative mutually beneficial learning (Dale et al, 2023).

Subject and degree boundaries can often be arbitrary. By contrast, we argue that interdisciplinarity encourages not just more complex discussions but that it allows greater and more diverse practitioner experience to be embedded within the curriculum. This is something that can only make graduates more work ready for modern employment. Ultimately, working across departmental groups can mean a greater initial investment in time is required in comparison to other, more traditional, deliveries. However, this paper shows that the benefits to the personal and professional development (of both staff and students) mean that this investment is worth exploring – even if that intervention is only assessed formatively for some groups.

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Employability through a lens: multidisciplinary, student-centered approach to career development

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Background

This case study reports on a sustainable employability project that is for and in partnership with students. We employed an innovative multidisciplinary approach by involving stakeholders from several different fields of knowledge to understand how we can embed employability into our learning environment. By combining a number of strategies, we have developed pedagogical resources that place employability at the heart of our programmes to support students in regular reflection on the skills they have gained from their course modules to better understand the real-world applications of their education.

Employability and graduate outcomes are a key factor in university ranking. There are sector-wide concerns over students' 'career readiness' and difficulties transitioning from university into a working environment (Mello and Wattret, 2021). Transferrable skills are needed by graduates to succeed in the work environment. However, graduates may not be aware that they possess the required employability skills (Jackson, 2013; Strachan, 2016). This is reflected in feedback from employers stating that students often struggle to provide an example of a time when they have used a given skill. This could be partially attributed to a lack of reflection on the skills gained throughout a given university course (Brockbank, 2007) and therefore the development of transferable skills in the workplace could be enhanced if self-reflection was given more emphasis during higher education (HE) study (Crebert et al, 2004). This is especially relevant to the content of individual modules, which have been designed to equip students with skills valued by employers. Moreover, many students are not aware of all possible career trajectories following their Bioscience programme. This 'articulation of skills gap' (Joy et al, 2015) highlights the need to talk to our students about the skills developed during their programmes of study (Harrison, 2017) as well as embedding employability awareness into the curriculum.

The goal of this project is to equip students with the knowledge and confidence to recognise and articulate the skills they have to succeed in their chosen career path. We used the Embedding Employability in Higher Education Framework, which includes reflection and articulation as one of the 10 broad areas of focus (Advance HE, 2019; Cole and Tibby, 2013).

Our project has been carried out across the Bioscience programmes within the department of Applied Sciences at Northumbria University. Northumbria University has made a commitment within its education strategy to ensure students achieve their full potential regardless of background and therefore we ensured that the project incorporated the three independent framework principles of inclusivity, collaboration and engagement. The tools are readily applicable and scalable, providing consistent structured support without the need for staff to create bespoke resources.

Approach

The project has been running since 2021. Our outputs include interconnected components: an employability matrix, skills reflection sheet, a comprehensive guide to employability and careers in the life sciences featuring interviews and talking heads with employers and alumni (Figure 1). These resources have been informed by the concept of working in partnership with students (Harrington et al, 2014) as change agents using the POWER framework described by Verwood and Smith (2020) to ensure all students felt empowered to fully contribute (Verwood and Smith, 2020). In this way, students were involved in the scholarship of teaching and learning (Healey et al, 2016).

The rationale was to take a student-centered approach that involved undergraduate project students (n=3) undertaking educational research projects, a student intern and undergraduate students enrolled on the programmes (n=42). By also including alumni (n=15), employers (n=12) and an employability partnership manager, the combined professional specialisms enabled us to gain a clear view of the areas to focus on to develop richer, more authentic solutions to using student voice to support staff and students in engaging with employability as well a network of connections. Regularly including students for their undergraduate research project as well as volunteers and interns enables the project to be sustainable and ensures that resources are developed and refined through continuous feedback and review.

Figure 1. Embedding employability into the learning environment using interconnected strategies



Phase 1

We cannot assume students know what employability skills are or that they are able to articulate them. In phase 1, an undergraduate student carried out a year-long educational research project to understand what students know about key employability skills. They designed and conducted questionnaires with students from across all years of the undergraduate Biomedical Science programme. In response to key themes, a module skills matrix (Figure 2) was then developed consisting of a list of five soft skills and three hard skills with definitions and prompts for each skill and space for specific module examples. There are a variety of examples in the literature but very few separate skills under the subheadings of hard/soft. We designed the matrix to be specific to the skills required by accrediting bodies for the programme, including the Institute for Biomedical sciences (IBMS). The matrix was then distributed to module leaders to add skills gained through module-specific activities. The matrix seeks to enable students to become aware of their skills and be able to articulate these skills to others as part of career-related activities. We followed up with a trial within focus groups, supported by an employability manager, with final year students (n=11) on the Biomedical science and Biology programmes to evaluate its usefulness and refine the design. Students were given a blank matrix to fill in for a module they had all studied the previous year and then asked to compare this to a prefilled matrix.

Phase 2

With a focus on supporting the transition to employment, which is when students typically turn their attention to employability, we worked as equal partners with a further year-long undergraduate research project student and an employability intern funded for 100 hours through the Northumbria University student opportunities scheme. Questionnaires with students, employers and alumni helped us to define and develop a shared understanding of the language around skills and identify those that employers value and which have supported alumni in their career journey. We then focused on turning the data and analysis from both phases into co-produced pedagogical outputs that facilitate students to engage proactively and help staff to support employability. We co-produced a skills reflection sheet (Figure 2) to go alongside the matrix that can be used throughout the student lifecycle for students to provide detailed examples and rate how confident they felt about a given skill. We also developed an employability 101 guide with selected employers and alumni featuring recorded 'talking heads'. Recruitment of employers and alumni and recording took around six months to complete. This approach aimed to gain insights into the industry, assess desirable skills, and provide students with advice on careers in the sector.

Figure 2. Employability Matrix developed in Phase I identifies skills developed in a given module. Prompts enable module leads to quickly populate the matrix for their own module. Based on the skills identified through the Employability Matrix, students then populate a reflection sheet developed in phase 2 with more detailed examples and an indication how confident they feel about given skill.

	Skill description	Skill gained through the module? (Yes/No)	Prompt
Soft skills	Complex problem solving A collection of self-regulated psychological processes and activities necessary in dynamic environments to achieve ill-defined goals that cannot be reached by routine actions. Prompt-interpret and evaluate data e.g scientific report.		Interpret and evaluate data e.g scientific report
	Team working The process of working collaboratively with a group of people in order to achieve a goal.		Have students contributed to group activities/ investigations
	Active learning An approach to instruction that involves actively engaging with course material. e.g discussions, case studies or role plays.		Engaging with peer teaching debates or class discussions
	Critical thinking The objective analysis and evaluation of an issue in order to form a judgement.		Observation and analysis tasks
	Communication Skills Sharing and receiving information with others verbally, nonverbally and in writing.		Use of forums/ email/ Tutorial sessions
	Interpreting data The process of assigning meaning to the collected information and determining the conclusions, significance, and implications of the findings.		Data has been collected, analysed and presented e.g standard curve plotting
	Numeracy skills The ability to handle numbers, including the basic skills of addition, subtraction, multiplication, division and percentages.		Understanding the relationships between numbers e.g formula calculations
Hard skills	Analytical thinking The ability to tackle complicated issues by evaluating information you've gathered and organized.		Extracting key information to develop a solution
	Others Are there any other skills that weren't identified above, that you feel students gained in the module.		
Additional skills			

Northumbria University
NEWCASTLE

SELF-REFLECTION: SKILLS DEVELOPED IN UNDERGRADUATE STUDIES

Listed below you will find many of the transferable skills that employers expect you to have as a BSc Graduate. Although you may not realise it, all these skills have been explored in some way in your studies over the last three years. Please go through the table and rank how confident you are in each skill and then try and give an example of what activity you may have done on your course to develop each skill or give a specific module you think developed a skill particularly well.

	1	2	3	4	5	Example of where this skill may have been gained
Soft skills						
Complex problem solving A collection of self-regulated psychological processes and activities necessary in dynamic environments to achieve ill-defined goals that cannot be reached by routine actions.						
Team working The process of working collaboratively with a group of people in order to achieve a goal.						
Active learning An approach to instruction that involves actively engaging with course material. e.g discussions, case studies or role plays.						
Critical thinking The objective analysis and evaluation of an issue in order to form a judgement.						
Communication Skills Sharing and receiving information with others verbally, nonverbally and in writing.						
Interpreting data The process of assigning meaning to the collected information and determining the conclusions, significance, and implications of the findings.						
Numeracy skills The ability to handle numbers, including the basic skills of addition, subtraction, multiplication, division and percentages.						
Analytical thinking The ability to tackle complicated issues by evaluating information you've gathered and organized.						
Others Are there any other skills that weren't identified above, that you feel students gained in the module.						
Hard skills						

1 = Strongly disagree, 2 = Disagree, 3 = Not Certain, 4 = Agree, 5 = Strongly agree

Based on the employability Module (left) students produce self-reflection sheet (right)

Phase 3

We are currently embedding the matrix and reflection sheets into all modules across the Biology and Biomedical science programmes within the department of Applied Sciences, which together have an intake of around 200 students per year. Both resources are included in module guides and signposted in welcome lectures. Employer and alumni podcasts and the employability 101 guide are hosted on the programme learning platforms.

Outcome

We have developed a toolkit of inspiring and evidence-based resources to support student reflection on the employability skills gained through specific modules, integrate employability, and widen personal development throughout the Applied Sciences curriculum.

Our work contributes towards answering the question ‘how can we embed employability into our learning environment to address the articulation skills gap?’, a key concern for lecturers, employers and students. Although the university library and career services offer career advice, students felt strongly that a joined-up approach with programme-specific support was invaluable. To enable a consistent and joined-up approach, stakeholders including academic staff, students, careers services, alumni and employers should be involved with embedding employability. To this end, the project has been presented to the Head of Career Planning and the Head of Employability Partnership team with a view to rolling out as a university-wide skills support programme. The outputs and findings have been disseminated at in-house teaching forums to showcase the value of the project as a case study in support of both employability and working with students as partners (SaP).

Headlines from our surveys

- + In phase 1, 70% of the students said it was important to signpost skills in each module using prompts.
- + Students report that the tools helped them gain a deeper understanding of their strengths and the skills demanded by the job market. In Phase 1, a questionnaire evaluating student confidence in articulating and locating skills was provided before and after the matrix filling activity. There was a statistical significance (Wilcoxin sign rank) in the mean student score for each question, demonstrating improved confidence and ability to articulate skills.
- + The resources assisted instructors to develop employability skills statements in their syllabi and learning outcomes.
- + In phase 2, 80% of students said that skills reflection sheets increased participants’ confidence in their ability to identify transferable skills and their employability awareness.
- + Both alumni and employers emphasised the importance of soft skills in addition to specific technical skills. *“Don’t forget the ‘soft skills’! They are just as important as the scientific”.*
- + Employers in a variety of roles from the Life Sciences industry highlighted that students should be supported to keep an open mind about their career pathway.

“There are many great and diverse careers within the Life Sciences. I didn’t appreciate this as a student. Some of my fellow students were not the best scientists and did not perform brilliantly academically but went on to have successful careers in operational or commercial roles within the industry that leveraged their scientific background.”

Key takeaway messages

- + Embedded into modules, the tools provide inclusive and equitable opportunities to enhance employability for all students regardless of background, programme or mode of study.
- + Through a collaborative and integrative approach, we have developed pedagogical resources that address the ‘articulation skills gap’.

- + Resources developed with students as partners promoted better engagement.
- + The project has shown that students can be supported to effectively articulate their employability skills and retain this ability on graduation.

Advice for colleagues adopting the resources

- + The matrix and reflection sheet are readily adaptable to any discipline and enable instructors of different courses to integrate skills awareness and reflection about course-related employability skills.
- + The resources are applicable to large cohorts where other interventions (such as 1:1 meetings) are difficult.
- + Working in partnership with students is key to ensuring rich authentic outputs and good student engagement.
- + A similar project would require a minimum of a lead member of staff and module leads to populate the matrices.
- + It is important to consider dissemination strategies; partnerships with other university services are valuable in supporting this.

Where next?

We will continue to include students to enable the project to be sustainable and ensure that resources are developed and refined through continuous feedback and review.

Collaboration with employers revealed a striking emphasis on the cultivation and promotion of soft skills and personal attributes among students. These findings from employers' surveys align with recent literature reporting the importance of soft skills in university graduates (Succi and Canovi, 2020).

This raises the questions:

- + How do we help students foster and recognise soft skills?
- + Which skills are fundamental to all careers irrespective of stage?

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Sustainability

Building the skills portfolio of physics students through sustainability

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Background context

Recent higher education (HE) policy reforms, such as the condition B3 of the Office for Students' (OfS) regulatory framework, requires HE providers to deliver successful outcomes for all their students (Office for Students, 2023a; OfS, 2023b). At the same time, Physics skills are central to the new industrial landscape (eg computing and health technologies). This means Physics skills are in high demand but graduates increasingly need a combination of broad knowledge of fundamental Physics and graduate attributes to take advantage of these new highly skilled opportunities (Emsi Burning Glass, 2022). This means there is significant unmet demand for Physics skills, impacting employers' ability to innovate and grow (Institute of Physics, 2022a; Industrial Strategy Council, 2019). Part of the answer relies on universities giving students the right balance of knowledge and skills, so students can apply their knowledge in ways they have not been taught. Supporting students to develop graduate attributes (such as problem solving and creative thinking) is also critical to address broader societal challenges, such as decarbonising the economy and dealing with ageing societies. Therefore, development of graduate attributes through the curriculum creates an opportunity to develop a Physics degree that gives undergraduate students the skills, knowledge and experience to contribute to an environmentally and ethically responsible society.

The White Rose Industrial Physics Academy (WRIPA) is a 10-year collaboration between business and the university Physics departments of Hull, Leeds, Nottingham, Sheffield and York. Starting in 2014 and supported by HEFCE Catalyst funding and OfS Challenge Competition funding, WRIPA's mission is to provide undergraduate physicists with the opportunity to gain careers efficacy, work-integrated learning and graduate attributes that better prepares them for managerial or professional employment (OfS, 2022c) in a technical sector. A consortium approach enables the WRIPA universities to develop a broader range of industrial relationships and draw on a wider range of academic expertise than are available at individual universities. Together, the WRIPA universities are able to reach critical mass to catalyse change in Physics in higher education. This change places a strong emphasis on fully embedding graduate attributes within the Physics curriculum. This approach enables students to relate their learning to societal challenges, such as the importance of sustainability and the environment and the ethical or moral considerations of scientific research. Skills acquisition is also important, as skills have much greater prominence and are compulsory in the Institute of Physics' new degree accreditation framework (IOP, 2022b).

Background

The Department of Physics and Astronomy, University of Sheffield, has embedded skills training, employers and work-integrated learning across the Physics degree from year 1 to year 4. The revised Physics degree is informed by the university's strategic plan for education and its commitment to align curriculum developments with the changing labour markets. This gave rise to the mySkills Portfolio (University of Sheffield mySkills portfolio, nd) and the Sheffield Graduate Attributes (University of Sheffield, the Sheffield Graduate Attributes, nd). The mySkills platform enables students to self-assess and reflect on their skills and employability and align this with the Sheffield Graduate Attributes. The Sheffield Graduate Attributes are 12 skills and characteristics that the university and employers have identified as beneficial for onward career success.

In 2019-20, Sheffield Physics piloted the mySkills platform in a redesigned 70-credit Classical and Quantum Physics module. The aim of this year two core module is to support physicists to further develop graduate attributes by providing opportunities for writing, data analysis, presentation and team work.

The module has run for four years and brings together the taught core Physics, laboratory work and a group-based project. The group-based project forms 10% of the module mark and is aligned to the university's mySkills portfolio and Education for Sustainable Development (ESD) (Advance HE, 2021). ESD enables Physics students to integrate social, economic and environmental dimensions into their project work, contextualised within the Physics subject. Contextualisation is important as it gives students the opportunity to apply their academic knowledge to unfamiliar problems, which lie outside the taught Physics. Reflection on skills developments also supports physicists to align their work to both the University of Sheffield's (UoS) and the United Nations (UN) sustainable development goals.

For the project activity, students work in a group of five. Groups nominate their own project topics based on their interests and how they feel physicists could support a more sustainable world. Nomination requires students to use critical thinking skills to analyse and interpret their findings and synthesise this learning towards a sustainability challenge. For example, students came up with the following project titles: (a) Exploring more sustainable alternatives to rare earth metals in technology; (b) Current and future viability of nuclear energy generation and (c) Can carbon capture technology reduce climate change?

Table 1 highlights how Project C maps across graduate attributes and sustainable development goals.

Table 1. Student Project - Can carbon capture technology reduce climate change?
The coloured panels highlight the graduate attributes the students gained and how these map on to sustainable development goals.

UoS graduate attributes	UoS key Sustainable Development Goals	UN's Sustainable Development Goals
My learning	Quality education	No poverty
Academic skills	Affordable and clean energy	Zero hunger
Applying knowledge	Sustainable cities and communities	Good health and wellbeing
Research and critical thinking	Responsible consumption and production	Quality education
Digital capability	Climate action	Gender equality
My impact		Clean water and sanitation
Interpersonal skills		Affordable and clean energy
Working with others		Decent work and economic growth
Equality and inclusion		Industry, innovation and infrastructure
Ethics and sustainability		Reduced inequalities
My self		Sustainable cities and communities
Positive wellbeing		Responsible consumption and production
Purpose		Climate action
Personal development		Life below water
Enterprising		Life on land
		Peace and justice
		Partnerships for the goals

The students' research was disseminated by a live 15-minute presentation. Each group member presented a segment to their peers and received feedback. At the same time, a panel of academic staff assessed the presentation.

Outcomes

Description of the nature and extent of the work's impact. What are the main findings?

From 2019-20 to 2022-23, 293 physics students have completed this module. In 2023-24, a further 100 students will take this module. An alumni survey for the class of 2022 revealed that 86% of students who responded and who took this module are in managerial or professional roles. Module evaluation gave qualitative feedback that highlighted not only that students are learning graduate attributes but that students are aware of the skills they are learning:

“It made me a better communicator, and helped me develop ways to professionally disagree and give constructive feedback.”

“I think this year I developed skills for effective teamwork – communication, sharing of ideas and adaptability.”

“I have learned how to deal with challenges in a professional way, constructively reflecting on how I deal with them.”

Giving students the opportunity to choose their own topic areas was an important feature of the project design. Empowering students in this way maintained motivation as students had inherent interest in the topic and felt part of the decision-making. Students worked with peers they had not worked with before, mirroring team working in industry where skills are brought together to achieve a common goal. Students responded very well to the opportunity to focus on Sustainable Development Goals contextualised within physics. They also wrote a reflective essay about their project experience and the impact of their research topic for physics and future sustainability. The experience gained was ideal content for students' mySkills portfolio. Also, several students who were not on the year in industry programme were more confident to consider applying for roles based on their skills development. This led two students to successfully apply for 12-month placements. One finalist has been inspired to apply for a graduate role at Sellafield. He stated that his project on the future viability of nuclear energy generation “made me think wider and differently about what I can do with my physics skills”.

Key messages and transferability

All universities are committed to providing students with personal development opportunities that better prepare them for an ever-changing world. A more inclusive way to do this is by developing innovative pedagogies and curricula. It is envisaged that ESD and the approach to skills learning and assessment can be embedded within any degree discipline, offering an excellent way of ‘translating’ specific content knowledge to societal challenges. The group-based activity described in this article not only offers students the opportunity to develop graduate attributes but to reflect on their learning. For example, student groups communicate their research topic to inform a non-specialist (though scientifically literate) audience. The groups are required to accurately describe the science involved

and pitch at the audience level while ensuring the audience is aware of the need and impact of the research. Skills development and synoptic learning is of critical importance as graduate employers want to hire students who can solve unfamiliar problems (Hooley, 2021).

Next steps

The next step is to engage employers in the assessment and feedback phases of the group project to replicate an assessment day setting. Currently, students present their project findings to an audience of their module peers and academic staff. The aim here is to help students to reflect and plan to develop their graduate attributes. For example, a small number of students who were not actually presenting but were waiting their turn looked disengaged. Their learning takeaway is the students are constantly being appraised during the presentation stage, similar to the environment of an assessment centre for a graduate programme.

For the 2023-24 cohort of students, taking the same module, groups of students will research an aspect of Physics to solve a 'future-focused' sustainability challenge. These challenges could be energy production, environmental protection or global warming. In addition, the same module will feature two new projects focused on Physics in Modern Society. Students will write an individual report, then produce and present a poster in pairs, reflecting on their skills in working with others and applying knowledge. Again, this new approach aligns with the requirements of the new IOP accreditation framework.

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Turning sustainability into skills

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Sustainability is growing as a trend in institutional identity and graduate recruitment. However, students, universities and employers do not necessarily agree on what sustainability means to them, or how it impacts skills development in higher education (HE). At Warwick University, the codification of transferable skills into the Core Skills Framework included sustainability as one of the 12 Core Skills. Turning sustainability into a category of skills posed a unique challenge, leading us to consider, what are skills for sustainability? Are they recognisable transferable skills? Are they unique, or interpretations of, for example, teamwork? This case study will outline the approach taken to doing so and sketch some emerging conclusions.

Background

The development of the Core Skills Framework for the Warwick Award had two objectives and a working method. The first objective was to define a range of transferable skills that operate as subskills of the 12 Core Skills chosen by a separate process before the launch of our project (Mertova and Luchinskaya, 2019). The recommendations made in 2019 did not include sustainability among the 12 'core employability skills' put forward by the authors; sustainability was added as a broadened reinterpretation of the 'Citizenship (local and global)'. In this way, we were given sustainability as a 'Core Skill', and it was up to the project team to make sense of it. The second objective was to develop a body of definitions and supporting materials on which we could base the Warwick Award programme itself, to provide students with the language to recognise those skills and articulate when and how they had practised them. Our working method was based on a simple definition of 'skill' as the *ability* to do something, along with a 'dimension of increasing ability' (Attewell, 1990). While Attewell saw this as a "source of ambiguity", this progressive dimension reinforced the value of existing competence and encouraged confidence in improvement through experience.

Applying this understanding of skill, we constructed definitions for each of our Core Skills and a set of sub-skills in each category. This worked effectively for some Core Skills, such as Critical Thinking, about which much has been written and many attempts have been made to develop definitions and techniques (see, for example, Halpern, 2014; Moore, 2013). In our case, the subskills included Identifying, Clarifying, Questioning, Interpreting, Analysing, Contextualising, Evaluating, Arguing, and Synthesising. Following the definitions provided for each, and applying them in that order, suggested an applicable method to develop Critical Thinking in practice.

However, several of our Core Skills categories did not have obvious components that could help us, or those students who would engage with the Warwick Award, to make sense of their abilities in this area or measure improvement. Ethical Values does not, for instance, present clearly as a skill, if a skill is the ability to do something. Sustainability was one of those more challenging categories.

Approach

Early in the project we sketched a provisional framework, expanding on the 12 Core Skills. For Sustainability, initial research uncovered inconsistencies in attempts to relate the concept to the acquisition or development of skills or competencies. Some of the suggestions in this draft included the Advance HE/QAA interpretation of UNESCO's 'key competencies for sustainability', described in *Education for Sustainable Development Guidance (2021)*. This document listed systems thinking, future thinking and strategic competency. It also included several of our Core Skills: Self-awareness, Critical Thinking, Problem Solving, and Collaborative Competencies (teamwork and communication). The eighth, normative competency, also aligns with our definition of Self Awareness and its subskills. The three unique entries in this set represented a potential point of difference in defining some skills for sustainability. However, they did not lend themselves to clear definition or application within an employability context; transferability was unclear, as understanding and application in one context did not easily translate to reapplication in another. They would be difficult for students to recognise in their own actions.

We had also inherited working definitions for the Core Skills. Many of these were not definitions of the categories as skills. Sustainability, not immediately obvious as a skill, was particularly problematic in this regard. A methodology for defining the 12 Core Skills and developing a framework of subskills was developed by Dr Tom Greenaway, with the principle that a skill is the ability to do something. On drafting the definitions, for both Core Skills and subskills in each category, we recruited small panels of experts in each category (known as Academic Advisory Groups) from across our university community to test these ideas, refine and finalise the definitions.

To define sustainability, it was first necessary to consider what it meant to the University of Warwick, the HE sector, and society more broadly. As a concept and a field, it is both inherently interdisciplinary and vulnerable to manipulation outside critical circles, where cultural popularity has allowed it to stand in for questions of accountability, ecological and economic justice, while the malleability of its definition makes it difficult to measure (Kuhlman and Farrington, 2010). One interpretation offered a useful basis for an independent definition. Sustainability has been conceptualised using three pillars or circles for over 30 years, (Purvis et al, 2018) drawing on concepts with a substantially longer history (Seghezzeo, 2009). This tripartite model presents environmental, social and economic sustainability as interdependent, but also as equal parts of a whole, failing to subordinate the economic sphere to human or ecological needs and continuing to place humans (both economic and social) outside of something known as 'The Environment'. Further, it is often inconsistently addressed in any 'mono-focal approach to sustainability' (Bergmann et al, 2018), where inadequate considerations of the complex interaction between these pillars emerge from failures to address the associated externalities (a problem repeated and reinforced whenever 'economics' is given parity with 'environment' or 'society').

Our definition attempts to properly subordinate those ‘human’ pillars or spheres, to an encompassing conception of the environmental, using a hierarchy of sustainability that places Planet (including climate and ecology) over People (incorporating society/culture, and justice/equality), while also incorporating People fully within Planet. Human-made Systems – Politics and Economics – should then be subordinated to both. With this relationship in mind, I defined sustainability, as a concept and as a Core Skill, as follows:

Conditions for developing capabilities towards balancing the needs of human culture and wider environments for the present and future.

The ability to develop capabilities towards balancing the needs of human culture and wider environments for the present and future.

This definition was developed in collaboration with our Sustainability academic advisors, and subsequently endorsed independently in a report by Kevin Zhou (2022), who recommended the adoption of this definition by the university to clarify the institution’s position. The definition was then communicated at the launch of the Warwick Award to participating students. By this stage, the development of subskills for Sustainability had been reconsidered.

The idea of Sustainability as a unique Core Skills ‘meta-category’, or a conceptual/contextual lens on the other Core Skills and their subskills, developed. It had become clear that of those eight Advance HE/QAA competencies, five of them matched with other entries elsewhere on our framework (see above), while the further three ways of thinking could be applied through a combination of other Core Skills too (for an example, see Dalal, Carberry and Archambault, 2023). The same applied to other suggested subskills for sustainability we had identified. We concluded that Sustainability skills could be any other skills, viewed through a sustainability lens, governed by the ideas which support our definition of Sustainability.

We included selected ‘indicative’ subskills under Sustainability, taken from elsewhere on the framework, allowing us to demonstrate this in practice, but we did not want to rewrite the entire framework.

The selection was limited, emphasising its indicative purpose, encouraging students to apply their understanding of sustainability in this way to any other skills they believe they have practised.

Outcomes

Early applications of Sustainability as a Core Skill in activities included in the Warwick Award demonstrate that students are open to this perspective and respond to it. At the core of the Warwick Award is the practice of reflecting on skills students develop during activities to secure Core Skills Points. A good reflection references the Core Skills we have tagged to the activity and further Core Skills or subskills identified in their experiences.

Two activities, to date, present clear examples in which Sustainability as a Core Skill is embedded. The 'Warwick Sustainability Challenge: Waste', took place as a competition managed by Warwick Estates based on a model developed for an Employability Challenge in 2021 and Sustainability Challenge in 2022 (Kelestyn and Reid, 2022). Those students who reflected on their involvement were explicitly aware of the Sustainability context. In their reflections, they consistently identified Critical Thinking, Problem Solving, Communication, Teamwork, and Self Awareness (all Core Skills), giving examples from their experience during the challenge. They applied a Sustainability skills lens to their experience. The Carbon Literacy Certificate was developed by Dr Rosa Fernandez Martin as an introduction to carbon literacy consultancy concepts and practices. Again, it is explicitly aligned with the theme of Sustainability. On reflection, participants again identified several of the Core Skills and subskills, this time including Critical Thinking, Self Awareness, and Organisational Awareness prominently.

The next stage in the development of this approach is to engage students participating in the Warwick Award with a process of applying this Sustainability skills lens to the Core Skills Framework and their own experiences. This will include an 'Introduction to Skills for Sustainability' Moodle course, which explores debates on Sustainability's definitions and applications, with a reflective exercise that encourages students to redefine skills from our framework from the perspective of Sustainability and attach them to examples from their own experiences. The Skills team will also be organising further instances of the Sustainability Challenge using the model previously designed by Lory Barile, Bo Kelestyn and Emily Roisin Reid, where applications of the Sustainability Skills lens will be incorporated into the approach. As Warwick Award activities, student participants will have their skills development tracked through participation and reflection, offering some insights into learner progression, for both user and the Warwick Award team.

The ultimate aim is a methodology and framework for identifying and reflecting on the development of skills for sustainability across student experiences in the Warwick Award. It will draw on the Core Skills Framework, with Sustainability's Core Skills definition at its core, and the principle that all skills can be utilised for sustainability-related ends if the individual is aware of relevant meanings, contexts and wider debates.

Timeline of Core Skills Framework, Warwick Award, and development of a method for defining Sustainability Skills

2019	<i>Graduate Employability and University of Warwick: Graduate Skills</i> recommended 12 'core employability skills' for Warwick.
2020	Choice of 12 Core Skills finalised by Education Committee; at this stage, 'Sustainability' replaced 'Global Citizenship'.
2020-21	Early attempts to share Core Skills with staff and engage students in their applications. Some staff raised concerns about some selections. Students engaged in a limited way with an incomplete online course.
Summer 2021	Funding secured for new co-curricular skills award project, intended to promote and raise awareness of the development of the twelve Core Skills.
October 2021	Project begun by the central Skills team, with a substantively new staff in place.
Jan-April 2022	Name, branding, Core Skills definitions, and framework were all designed by Skills team. Consultations with experts in areas relating to each of the Core Skills to develop the framework and definitions. Challenge of defining skills for Sustainability became clearer.
April-August 2022	Warwick Award pilot – using various systems and processes, students engaged with the concept of a skills-based award programme, with a system of points values for activities and hours worked, and a process of reflection on skills development.
May-Sept 2022	Warwick Award digital platform developed with Grad Intelligence. Development has continued throughout the first year of the Award.
October 2022	Official launch of Warwick Award.
November 2022	First Sustainability-specific Warwick Award activity completed – the 'Sustainability Challenge: Waste' – with participants reflecting on skills practised during competition.
June-September 2023	First year of Warwick Award concluded. Evidence for recognition of Core Skills Framework in Sustainability context now available.
November 2023	New instance of the 'Sustainability Challenge' will take place, operated by Skills team, aiming to analyse development of awareness in, and reflections on, Skills for Sustainability in practice.
Summer 2024	A Sustainability Skills methodology and framework will be completed. It will use data available from two years of student reflections from the Warwick Award, across activities defined by their Sustainability context.

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Employable and sustainable change-makers through Education for Sustainable Development

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Background

Universities have been identified as one of the relevant actors to deliver on the United Nations 2030 Agenda and the Sustainable Development Goals (SDGs). This reflects the urgency to embed the principles of Education for Sustainable Development (ESD) into all levels of education (Cebrián et al, 2021). SDG 4 within target 4.7 explicitly highlights ESD to cultivate global citizens as change agents towards more sustainable societies, embracing human rights, sustainable consumption, gender equality and cultural diversity among others (Corres et al, 2020). Universities play a critical role in tackling the challenges of embedding ESD (Sánchez-Carracedo et al, 2023). There have been different levels of engagement and effort made to commit, integrate and implement ESD into policies, institutions and curricula to achieve the SDGs (Lozano, 2013), which directly contribute to staff buy-in and training, promoting students to be agents of change or having any real systematic effect (UNESCO, 2017; Tejedor, 2019). As outlined by Sterling (2021), this embedding of ESD needs an institutional approach, rather than a mere accommodation or even reform but must strive for transformation. To support this transformative approach and institutional buy-in to embed ESD across the UK higher education sector, Advance HE and the Quality Assurance Agency (QAA) (2021) launched a report on ESD Guidance to support embedding ESD in the curricula. The second QAA (2023) report offers specific examples, adaptable templates and advice on how this agenda can be reflected in academic quality processes.

In 2021, the Queen's University Belfast's BSc Food Quality, Safety and Nutrition programme was reviewed. This review highlighted the pressing challenges related to both employability and sustainability faced by the agri-food sector (Kendall, 2021). Employability can be hindered by a mismatch between the skills and key competencies possessed by graduates and the demands of the evolving sector. As a result, the programme was redesigned to introduce BIO1311 Sustainable Food Systems, a new core 12-week module for first-year students (QCF Level 4) centred around the sustainability challenges facing the agri-food industry, aiming to provide future graduates with the knowledge and tools to tackle and promote a more sustainable agri-food future that embraces sustainable practice such as addressing environmental impacts, ensuring ethical sourcing and meeting consumer demand for responsibly produced food.

Approach

Taking part in the UNESCO Learning Design and ESD Bootcamp (ALDESD, 2023; Calvert et al, 2022; Higgins et al, 2023; Toro-Troconis et al, 2023), provided the authors with the opportunity to co-design the new Sustainable Food Systems module and actively embed the SDGs and ESD through active learning methods and transformative pedagogies. The Bootcamp team comprised the authors: two academics, an academic developer and a PhD student who was also a graduate of the BSc Food Science programme, bringing a varied range of expertise across sustainability, ESD, food science, learning design and more, as well as valuable insights from the learner perspective.

To ensure ESD becomes more embedded within daily teaching and learning routines and to integrate SDG in the curricula, universities need to scale up existing successful activities and implement new types of actions that go beyond the current teaching practices (SDSN, 2020). We adopted a co-creation, students-as-partners approach, which has been proven to foster greater student ownership and engagement (Mercer-Mapstone, 2017). In addition to the valuable insights from our diverse Bootcamp team, input from various stakeholders such as current students, alumni, colleagues, employers, placement providers and other agri-food industry representatives was actively sought to shape this module. They emphasised not only the importance of sustainability as a critical skill for food industry professionals but also the need for problem-solving abilities and proficiency in handling data and digital processes, leading to our four learning outcomes.

- + Define food systems and understand their position within a global food context.
- + Identify and discuss the challenges associated with the sustainable production, processing and manufacturing of a range of food commodities and describe relevant approaches to mitigate impact.
- + Understand the impact of consumer choices on sustainable food systems.
- + Demonstrate an understanding of new data collection, analysis and interpretation methods and how these can be used to monitor and improve sustainability.

The module design adhered firmly to transformative pedagogies, which are instructional approaches that seek to challenge and reshape students' beliefs, values and assumptions through critical reflection and dialogue, the intention being to empower students to actively address social injustices (Tasler and Dale, 2021). To ensure a truly transformative learning experience, our curriculum was intentionally designed to be outward facing, connecting theoretical knowledge to real-world issues and challenges (Fung, 2017). The module introduced learners to several key concepts across food sustainability, including both technical and socio-economic. Emphasising practical application, the curriculum placed a strong emphasis on acquiring skills in data collection, analysis and interpretation.

The pedagogical approach was initially determined by the Bootcamp framework that included learning design, transformative pedagogy and active learning. The programme's requirements and the teams' collective insight were considered, as well as evidence-informed literature. This led to a focus on

active learning within this module as the best approach to enhancing learning, as it emphasises student participation and engagement through activities that encourage critical thinking and application of concepts, leading to deeper understanding and retention (Rieckman, 2018) and the development of problem-solving skills (Wiek et al, 2015).

Among the different active learning approaches was Problem-Based Learning (PBL), where students collaborated to analyse real-world problems and propose solutions (Cardon et al, 2022). This particularly fostered the development of the problem-solving competency (Karan and Brown, 2022). For example, one PBL session facilitated by a Sustainability Manager from the dairy industry used industry problem-solving frameworks, enabling students to tackle challenges related to animal feed, cattle management, fertiliser and fuel. A second approach employed was place-based learning, which connects learning to real-world contexts (Johnson et al, 2022). In Sustainable Food Systems, students participated in a field trip that traced a food commodity's lifecycle from a dairy farm to a production plant, and finally to a food bank. These experiences facilitated a more comprehensive learning experience (Gramatakos and Lavau 2018, 388).

In addition to promoting active and outward-facing teaching methods, the assessment approach aimed to be authentic. Unlike traditional assessments like essays or exams, authentic assessments mirror real-world tasks and challenges, enabling students to demonstrate their knowledge and abilities in ways that are more motivating and meaningful to them (Villarroela et al, 2017), as well as align closely to potential employability skills for graduates (Sokhanvar et al, 2021).

This module comprised three types of assessments. The first assessment, worth 25% of the module, involved students preparing a report from the perspective of the Service Development Manager for Fareshare, a UK food redistribution charity. Using real data from Fareshare, students had to create visualisations to gain insights into data patterns affecting the organisation's operations. This task simulated real-world scenarios that professionals might encounter. To enhance authenticity, next year students will be asked to produce a PowerBI Dashboard, mirroring Fareshare's actual management reporting.

The second assessment, worth 15%, was a reflective report where students conducted a carbon footprint analysis of their personal eating habits and reflected on their choices. This task aimed to deepen students' engagement with sustainability goals and develop essential skills for sustainability-related careers and community impact (Asgarova and Macaskill, 2021, p29).

The final assessment, accounting for 60% of the final grade, involved a group poster and oral presentation. Students had to review the food system for a specific commodity, identify sustainability challenges and propose innovative solutions. While professionals in the food industry might not typically create posters, problem-solving for sustainability is a regular aspect of their work. The poster format provided an academic skill unique to the programme, essential for those pursuing further studies.

Outcomes

The inclusion of place-based learning, industry-led problem-solving workshops, motivational guest speakers and authentic assessments resulted in a module that was both engaging and inspirational for students. End of semester feedback indicated that 88% of students found the place-based learning and guest speakers to be particularly engaging, with one student commenting that the place-based learning was “an invaluable experience which allowed everything we had been learning to combine and click into place”.

The module was designed for students to develop their problem-solving competency, and this was successfully achieved; when students enrolled in Sustainable Food Systems (n=24) they completed a pre- and post-module questionnaire (n=21) which contained Heppner’s Problem-Solving Inventory (Heppner and Petersen, 1982), a validated scale that measures problem solving abilities in adults. There was a statistically significant ($t(20) = -4.17, p < 0.001$) increase in self-rated problem-solving ability before ($M=131, SD=15.5$) and after ($M=147, SD=17.5$) engaging in the module. The end of module feedback indicated that the problem-solving workshops had been considered as engaging by 76% of the students as they “related to real-time challenges facing the food industry”.

Reflecting on the first delivery of the Sustainable Food Systems module and the feedback given by students, it is evident that when activities are designed to be authentic, realistic and promote ESD competency development, and are also set in context of the appropriate discipline with real-world scenarios, data and experiences, high levels of student engagement and learning can be achieved. Sugden et al (2021) reported that, when a similar approach was taken to designing online activities for Psychology students, students were able to make meaningful connections between theory and real-life applications.

Upon completion of the design process, the module team was left with a number of reflections on ESD. While it was time consuming, it enriched our practice as a group, encouraging us to integrate our multiple perspectives. It was often challenging to reconcile our different backgrounds, areas of expertise and opinions on teaching into the module. However, it did make the final product richer, which reflected the diversity that should be inherent in ESD.

The key findings from this can be applied to virtually any module in any discipline, as can the challenges. Institutional structures, policies and quality assurance processes are largely inflexible and subsequently limit opportunities to effect changes to teaching styles, learning outcomes and assessments in a timely manner. Disciplinary resistance to different teaching and assessment techniques was encountered. However, it may be due to staff not feeling confident or suitably trained to teach in this way. Borte et al (2023) recently identified similar barriers to active learning which is a key component of ESD.

It occurred to the team that although staff may be motivated to review modules through an ESD and co-design lens, that time may immediately pose a barrier. Therefore, it is important to note that for meaningful, intentional and sustainable change to occur, institutional support in the form of structures, training and workload allocation is crucial, as well as a partnership approach that draws on the expertise of staff and students, is aligned with research and operations.

The potential of this approach to module design can be maximised when used at programme level, to ensure a balance of assessment type, teaching and to support learner diversity and variability, while concomitantly providing students with opportunities to develop the necessary skills and key competencies to become work-ready graduates.

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Guiding and Integrating Sustainability and Employability through a Course/Programme

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Background

This case study uses the example of a professionally recognised BA Marketing course within Nottingham Business School (NBS), Nottingham Trent University (NTU). Issues of graduate employability, enterprise education and sustainability are attended to because NBS is a Principles of Responsible Management Education (PRME) Champion and has recognition with the Association to Advance Collegiate Schools of Business (AACSB) and the European Foundation for Management Development Quality Improvement System (EQUIS). The relationship between the specific course and the professional body (the Chartered Institute of Marketing, CIM) is of particular importance because of the practice focus of CIM, and this guides the approach and outcomes. The connection to NTU and its strategies (which include creating opportunities, valuing ideas, enriching society, embracing sustainability, connecting globally and empowering people – NTU, 2023). Specific comment on the earlier stages of the development of curriculum level work at NTU is, for example, contained in Howarth et al (2019).

Engagement with sustainability and Education for Sustainable Development (ESD) within higher education (HE) is not new. For example, the UN Decade for ESD ran 2005-14 and sought to mobilise educational resources to create a more sustainable future. In 2012, Sterling, through the future fit framework with the Higher Education Academy (HEA), provided guidance on learning and teaching (Sterling and HEA, 2012). This was followed by ESD guidance in 2014 (HEA and QAA, 2014), and more recent guidance in 2021 (Advance HE and QAA, 2021). Guidance on Enterprise and Entrepreneurship (EE) education was published in 2018 (QAA, 2018). This made clear links between EE and employability, in addition to specific employability frameworks and guidance (Tibby and Norton, 2020).

When it comes to the education of marketing students and ESD, it is identified that there are challenges related to how sustainability is conceptualised and defined and questions about what is 'needed' by marketers (Cheeseman et al, 2019; Lunde, 2018). Current marketing definitions (for example, from CIM), and how they are interpreted and operationalised and what early career believe marketing to be, pose further potential challenge (see for example, Woodall et al, 2022).

When seeking to embed and align ESD and employability education, Winfield and Ndlovu (2019) offer insight. The approaches identified by Winfield and Ndlovu (2019) reflect the work of, for example, Grieg and Priddle (2019) and a move beyond ESD as purely 'subject matter' and of concern in the context of the external environment of organisations. There is a wider view of development, beyond the cognitive domain, that it encourages, which embraces skills, attributes and values for ESD.

This wider view is recognised, alongside attention to the Sustainable Development Goals (SDGs), in the most recent Advance HE and QAA (2021) ESD guidance as essential for transformation and change for learners and activity related to sustainability.

The call from Cashian, Clarke and Richardson (2015) to move the employability agenda on, because of its passive view of skills, is evident and relevant too. The passive approach, which is grounded in the work of Holmes (2013), attends primarily to employability approaches that are led by 'possession' (eg the possession of skills relevant to employability). Concerns are expressed that work does/is not embracing and embedding more active 'positional' and 'processual' approaches. Both these approaches support a wider view of employability and student engagement, with employability throughout their learning journey and beyond graduation. The need for this wider view of employability sits well with EE and ESD guidance and recent definitions of employability. For example, that from Cole (2022), who suggests that employability is: "shaped by the results of a combination of learning opportunities across multiple spaces in our lives, it is both lifelong and lifewide and in this respect is developed both in the classroom, and critically, in life more broadly".

In this case study, the authors seek to offer some insight into how the various agendas, and the associated challenges and guidance, are responded to and integrated within the context of the case example course. While this is a marketing course, and there are specific challenges identified for this subject, the overall framework adopted by NBS and the BA Marketing course, and the subsequent approach used, are relevant for other Business Management courses, and potentially other courses in other subject areas.

Approach

Current literature identifies overall approaches to the integration of sustainability and ESD into business schools and their courses (Rusinko, 2010), specifically those with external recognition (Painter-Morland et al, 2016). There is also attention to what should be attended to which courses in general and those which are more specific (eg Weybrecht, 2013). With some sources, which are recommended by PRME, attending to both what is taught and approaches to engaging and supporting learning and their development through BM education and related subject matter (eg Molthan-Hill, 2023). Within Molthan-Hill (2023), Winfield and Howarth discuss the integration of ESD and employability education and outcomes specifically, and the 'needs' of graduates through the lens of competences for employability and ESD (with 'how to' information and materials to support).

Reflecting these works, and the guidance available, NBS has, for example, established school learning goals (SLGs) that embrace sustainability and ESD, enterprise and employability related outcomes. These recognise and articulate a wider view of knowledge, attributes and skills and, in turn, inform course learning outcomes (CLOs) and module learning outcomes (MLOs). The SLGs, CLOs and MLOs are reviewed, and achievement against them evaluated, in accordance with, for example, EQUIS and AACSB recognition (eg via the Assurance of Learning (AOL) process), ongoing course and module health assessments and in annual course and module reporting.

This approach seeks to recognise the systemic integration (Painter-Morland et al, 2016) of, for example, sustainability and ESD within the activities and strategies of NBS and the courses within (including BA Marketing). From this, and specifically related to sustainability and ESD but with wider benefits for EE and employability through its embedding, a NBS three-pillar strategy attends to:

- 1 **Mainstreaming** – which sees the integration of SDGs and ESD through all courses.
- 2 **Broadening** – the integration of SDGs and ESD across the disciplines beyond minimum (mainstreaming) requirements and activities.
- 3 **Enriching** – embedding SDGs and ESD into extra-curricular activities, namely CPD opportunities within and outside the core curriculum.

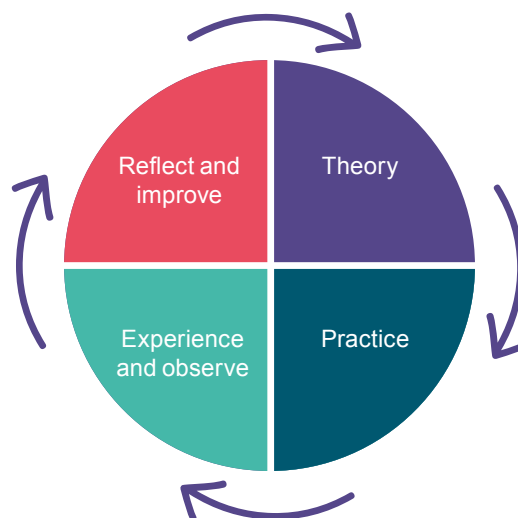
Broadly, these pillars of NBS strategy embrace Quadrant III activities from Rusinko (2010) and Quadrant V, systemic integration, from Painter-Morland et al (2016). Attention is paid to the SDGs but work embraces wider ESD elements, EE and employability education as outlined in the sections to follow.

Importance of purpose, approach and NBS learning model

The purpose of NBS is “to provide research and education that combines academic excellence with positive impact on people, business and society” (NBS, 2023a). Led by its purpose, NBS ensures all courses embrace personalisation (to support the personal, professional and employability journey and development of students), experiential learning (through, for example, more traditional placements and the embedding of periods of work and work-like experience, with reflective assessment, in Year 2 undergraduate courses) and the leveraging of links with a range of organisations and professional bodies to ground and enhance outcomes. The approach is course wide as a result of the SLGs, CLOs and MLOs and guided by annual reporting and elements within.

The NBS learning model further supports (NBS, 2023B):

The systematic and integrating approach, led by the NBS purpose and facilitated through the NBS learning model, allows competing agendas and themes to be embraced by courses such as the BA Marketing course with clear attention to employability.



Mainstreaming enterprise, sustainability and employability education

Like other courses at NBS, BA Marketing has a core/backbone of personalisation modules from Year 1 through to final year:

Level/year	Level 4/Year 1	Level 5/Year 2	Level 6/final year
<i>Module and overview</i>	<p><i>Personal and Academic Development PAD – Year 1.</i></p> <p>Core module for all learners tailored to subject areas as necessary – for marketing a tailored approach is adopted throughout. As a result, learners embrace the professional standards and competences of CIM and interpret sustainability related to experience, case study and evidence and research-based activities individually and collaboratively.</p>	<p><i>Employment and Enterprise (E&E) – Year 2.</i></p> <p>Core module for all learners which is again tailored for marketing students. Learners continue to embrace, through primarily experience and development focused activities this year, the professional standards, competences of CIM and related organisational and marketing themes.</p>	<p><i>Developing Professional Impact (DPI) – Final Year.</i></p> <p>This is a core capstone module for all learners which is again tailored for marketing students. Learners attend specifically to graduate employer and career needs with reference to professional standards, competences of CIM and the role and importance of their values and those of others.</p>

Level/year	Level 4/Year 1	Level 5/Year 2	Level 6/final year
<i>Enterprise and ESD Education</i>	<p>This module integrates enterprise focused experiences from NBS Discover, a transition activity that sees all students working in small groups on a sustainability focused activity based on areas of Nottingham City Centre.</p> <p>Early recognition of sustainability as an important dimension of business (through reflection on SDGs, NBS priorities and approaches of companies).</p> <p>Students undertake a guided skills and competence mapping activity and develop learning and development objectives and associated plan(s).</p> <p>Plans achieved through continual professional development (CPD) activities and supported via reflection.</p>	<p>This module builds on PAD and with ongoing action planning and CPD and, for this year, the embedding of 20 hours of work or work-like experience, including: internship, enterprise activity and consultancy projects.</p> <p>Students further assess and reflect on their skills and competences in a structured manner and relate their own competences to the specific requirements of employers (eg as expressed in adverts for roles and through their experiences).</p> <p>At this stage learners attend to a broader horizon beyond the end of Level 5/Year 2 to, for example, placement or study abroad and the final year.</p>	<p>For marketing students, this module engages a contemporary challenge set in partnership with practitioners.</p> <p>Learners work and present findings in groups and within individual reflective portfolios. This is a capstone for employability and development work and reflections through the course.</p> <p>Students are supported through a processual approach which ensures they, for example, recognise and attend to professional body and employer requirements to frame and support assertions related to their capacity for professional impact(s) and their ability to lead their careers and development beyond NBS.</p>
<i>Delivery and assessment</i>	<p>Coursework to consider integration of ESD within a case organisation with application and interpretation of what this means for marketers.</p> <p>Individual portfolio and reflection on CPD, plans and outcomes with forward action planning.</p>	<p>Individual portfolio with experience poster, theory to practice essay, action planning and reflection on CPD, plans and outcomes with forward action planning included.</p>	<p>Group-based assessment plus individual portfolio with action planning and reflection on CPD, plans and outcomes with forward action planning included.</p>

For BA Marketing, the mainstreaming asserts the focus on, for example, the SDGs, related organisations and marketing, alongside the focus on skills and competences. Action planning and reflections support a movement beyond 'possession' through a 'positional' approach (with attention to experiences and the requirements of organisations/ employers), to embrace the processual approach in Final Year/Level 6 (with attention to what next and beyond). A progressive approach, which is scaffolded and embraces authentic assessment(s) guides the learner journey and course and wider outcomes related to sustainability in a subject context but also global citizenship and applied employability insights. Recognition, and assertion, of professional body requirements through reference to competence frameworks further grounds this work.

Broadening enterprise, sustainability and employability education

Alongside, and probably following, mainstreaming is work to broaden the engagement with sustainability and ESD and the SDGs and related competences. The focus here may be seen to adopt a more traditional approach, with the attention to subject knowledge rather than the development of wider skills and competences. There can be challenges related to the perception of colleagues of the space in the curriculum for this work (with some concern related to the prioritisation of this work at the expense of other areas and the effort involved). However, the approach of NBS – guided by SLGs and CLOs, the NBS Purpose and the learning model – facilitates and supports the integration of ESD within, not separate to, subject modules, with the integration of EE and employability focused education too, but with a focus on cognitive and practice competencies.

Level/year	Level 4/Year 1	Level 5/Year 2	Level 6/final year
<i>Module and overview</i>	<p><i>For example, Fundamentals of Marketing and Marketing Environment – Year 1.</i></p> <p>These are core module for all learners on BA Marketing. Fundamentals of marketing (FOM) and marketing environment (ME) use an integrating case study. FOM attends to understanding core marketing concepts and theories to support work on other marketing modules from this point. Attention to ESD and sustainability is supported by the identification of specific SDGs to attend to with focus on the implications for product development. ME, broadly, attends to the environment in which organisations operate and ESD as interpreted through this lens.</p>	<p><i>For example, Delivering Customer Value and Buyer Behaviour – Year 2.</i></p> <p>These are core module for all learners on BA Marketing. The delivering customer value (DCV) and buyer behaviour (BB) modules uses an integrating case study, often a live case supported by speakers from the organisation or sector, and have identified SDGs for students to focus on in and through the modules and their work</p>	<p><i>For example, Strategic Marketing and Brand Management and Sustainability in Enterprise and Research Project – Final Year</i></p> <p>Learners take either the research project (RP) and sustainability in enterprise (SiE) module and strategic marketing and brand management (SMBM) is core. The RP and SiE modules are capstone and support the personalisation of the learner journey – including the focus on ESD/ sustainability. SMBM supports a strategic view of marketing and brand management,</p>

Level/year	Level 4/Year 1	Level 5/Year 2	Level 6/final year
<i>Enterprise and ESD Education</i>	<p>ME encourages recognition of sustainability challenges and opportunities and FOM SDGs 9, 12 and 13 to support reflection related to product development and internationalisation based on a case organisation. ESD is integrated within the modules through specific sessions that introduce key challenges, opportunities, models and concepts which students use to support their analysis and the justification of their proposals.</p> <p>The focus is students' understanding of sustainability within the context in which organisations (and marketers) operate and the identification and assessment of the relevance and impact of sustainability (through the lens of the SDGs) to the organisation, product development and internationalisation process(es) and the product proposed and its related marketing mix.</p>	<p>BB, for example, engages students with ESD via insights to 'green' consumer behaviour – this is tested specifically in the on the day assessment as applied to the case.</p> <p>DCV seeks insights to value in the context of sustainability challenges (eg via the lens of the SDGs, eg SDG12). Students are introduced through specific inputs to, for example, developments in marketing practices and current controls (eg Green Claims) and current theory (eg developments in the field and interpretation of value in the context of sustainability and marketing combined).</p> <p>The approach on DCV builds on the underpinning in Year 1/Level 4 with progression via the application and interpretation(s) in different and service v product(s)</p>	<p>SMBM seeks framing and the interpretation of sustainability through the lens of the SDGs and an organisation's purpose and success. Again there is clear attention to theory and practice to progress understanding and insight(s). The case application again allows different perspectives and the development of systemic and critical thinking skills for example.</p> <p>The RP permits or requires deeper dives into sustainability and the SDGs in an enterprise and marketing context. Students are not required to focus on sustainability within the RP, but many do.</p> <p>The alternative to RP is SiE, this permits a clear focus and deeper dive into sustainability through a consultancy-based project and assessment. This module is mapped to the CIM L6 Sustainable Marketing module and related recognition.</p>
<i>Delivery and assessment</i>	<p>FOM – group presentation and report</p> <p>ME – on the day, open book, assessment</p>	<p>DCV – group presentation and individual report</p> <p>BB – group presentation and on the day, assessment</p>	<p>RP/ SiE – individual coursework</p> <p>SMBM – individual coursework/ report</p>

Outcomes

Beyond NTU, NBS and BA (Hons) Marketing – it is evident that the Business and Management (BM) Subject Benchmark Statement (SBS, QAA, 2023) now asserts the importance of both ESD and EE education together and more centrally as part of the purpose of BM degrees. Much of the work on/ within BA (Hons) Marketing comes in advance of the more recent benchmarks and guidance and reflects and is driven by, for example, the NBS Purpose and Learning and Teaching Model and the NBS ‘three pillar’ ESD strategy related to ESD. These are, in turn, grounded by previous work at NTU, NBS, programme/course and module level which has a longer history (and thus timeline related to developments).

- + Ongoing activity within NTU related to sustainability, and previously environment, focused activities at the campus and overall NTU strategy level and within the curriculum. This work, which gathered pace from around 2009, included the requirement for all courses and modules, including those within NBS, to map, identify, articulate and address matters of sustainability and employability as a response to the university wide ‘curriculum’ refresh from 2016.
- + The development of School Learning Goals (SLGs) and review of course and module content as a reflection of the requirements of AACSB and EQUIS, although work related to ESD and employability had been core to the work of NBS (and more widely NTU) for many years. Some insight to this work, and that of NTU, having been provided in Howarth et al (2019).
- + Work by CIM, with specific relevance for BA (Hons) Marketing, related to sustainability and marketing with the inclusion of sustainability themes and linked work within professionally recognised modules in general and, more recently, specific modules (eg Level 6 Sustainable Marketing and Level 7 Sustainable Transformation in Marketing) and qualifications (eg Diploma in Sustainable Marketing).

For the case course, employability has always been an important driver and recognition by the CIM is of great relevance for the professional development of learners and related outcomes and success. The attention to sustainability and ESD, connected to employability, through reflective activities, insight(s) to values and purpose and the development of self-awareness, facilitates the connection of various agendas through the learner journey.

Work is ongoing and will focus on the clear(er) mapping of UN SDGs embraced in each module, at each level and overall – to ensure progression and the articulation of UN SDGs recognised at a course level. The specific ESD competences (from Advance HE and QAA, 2021) will also be mapped against modules and levels and the course overall, again to recognise progression, coverage and to support outcomes, with the work of Winfield and Howarth (2023) and their framework, which connects ESD competencies and employability of benefit to this work and ongoing activities at module and course level.

Recent work with students has identified a number of benefits of the approach taken by BA (Hons) Marketing, and other courses at NBS, these include:

- + the benefits of early engagement with ESD, EE and employability education – for example, through NBS Discover which ensures all learners actively participate in projects focused on sustainability, the SDGs and the activities of organisations and both collate and present findings and reflect on these
- + the integration of sustainability and the SDGs in core marketing modules from Level 4 through to Level 6, which ensures that the early attention to these areas (and the connection to professional and personal development) are asserted and interest, engagement and integration of ESD is maintained
- + the role of personalisation modules through the learner journey to embed and mainstream ESD alongside personal, academic and professional development supported by benchmarking (eg against identified skills, capabilities and competences and professional frameworks), action planning and development and reflection. This provides a solid basis for learners to connect sustainability and SDGs, EE and employability within assessments, through their development journey and beyond
- + the opportunity to gain subject and sustainability specific qualifications and recognition from professional bodies, which supports deeper dive development and insights and valuable ‘accreditation’ for those who seek it.

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Work-integrated learning

Using technology applications to support placement development

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Background

Despite diversification in methods of providing work-integrated learning (WIL) (Jackson and Brigstock, 2021; Jackson and Dean, 2023), work-based learning in the form of the traditional work placement or sandwich year may still be regarded as the gold standard of gaining work experience alongside academic study. Work placements have been an established feature of higher education (HE) programmes for some time, particularly on courses with high vocational intent such as engineering and business (St Clair-Thompson and Chivers, 2019). The Office for Students estimates that just over 25,000 UK undergraduates will have completed a placement during 2022-23 (Office for Students, 2023). However, the outcomes from taking a year in work placement are complex and varied (Hughes, Mouratidou and Donald 2023; Inceoglu, Selenko, McDowall and Schlachter, 2019). Not all interns have positive learning experiences or outcomes (Bittmann and Zorn, 2020; Zehr and Korte, 2020) and experiences are “heavily contextualised” (Hughes et al, 2023, p2043). For example, learning is an individual *and* a social process, requiring both cognitive and social activity (Zehr and Korte, 2020) but the experience of a placement year for students can be lonely and isolating.

It is essential that students can engage with their tutors throughout the placement experience for both pedagogic and pastoral support. Okolie (2022) found faculty supervisor support moderated the impact of work placement learning on workplace self efficacy and outcome expectations and student readiness for the school to work transition. Donald and Hughes (2023) suggest tutor input should not be confined to simply assessing the student at the end of the placement. Tutors need to monitor progress throughout, helping students understand links between the practical experience and their programme of study, to ‘normalise’ common experiences and by facilitating conversations between the student and line manager where necessary.

Achieving this level of support for placement students is clearly a challenge for busy university tutors with heavy on-campus workloads. Students are often working some distance from the university campus, sometimes internationally. Large cohorts may make timely face-to-face support difficult and discussions may have to be held outside regular university teaching hours if students are unable to make calls during working hours. Support provided by visiting tutors was one of the weakest elements of the placement experience reported by returning students at the case study institution, suggesting a need to explore alternative methods of communicating with and supporting students throughout their placement year. This case study reports on the innovative use of a technology application (app) called LoopMe to enable university tutors to support placement students remotely during their year in work placement.

Approach

In academic year 2022-23, all business school undergraduate students taking a year in-work placement between their second and third year of study at the University of Derby were offered the opportunity to engage with their tutor and keep a reflective diary using an electronic app called LoopMe (www.loopme.io). An optional placement year is offered to all students studying a non-vocational business programme. These last at least 38 weeks on paid, full-time contracts of employment. Fifty-one students from a range of business disciplines, including Accounting and Finance, Business Management, Economics, Human Resource Management, Marketing, and Supply Chain and Logistics, used the app during the research period.

LoopMe was designed by a small academic team at the Chalmers University of Technology in Gothenburg, Sweden. Accessible on a smart phone, tablet or the desktop of a personal computer (PC), the app provides participants with a way to share their thoughts and feelings about their placement privately with their tutor in a familiar social media style with written posts or 'loops', video, audio and image uploads. Students can add 'tags' and emotion icons (emojis) to summarise the content of their posts. The placement handbook informed students:

“The idea is just to ‘catch’ your activities, thoughts, feelings and behaviours ‘in the moment.’
You might do this over a quick cup of tea, lunch or on the bus home.”

The task facility within the app was used to set specific questions for participants to answer every three weeks (Table 1). The seven tasks encouraged participants to consider a range of experiences, to help overcome a natural inclination to focus on negative incidents (Bott and Tourish, 2016) including regular events, tasks or activities which can be important but not stand out as much as atypical or unique events (Tripp, 2012). Each task was repeated twice during the year to allow comparison of experiences at the beginning and end of the placement. The comments function on the app allowed the tutor to provide feedback, support and challenge to prompt a deeper level of reflection.

Table 1. Tasks

Task 1 (end of week 1)

Tell me how your first week has gone – the good and the bad.

Follow up question: what have you done? Who have you met? How have you been feeling?

Task 2 (end of week 2 and 25): describe a regular event, task or activity

Describe a regular event, task or activity that forms a significant part of your placement experience.

Follow up question: what do you do? Who is involved? How long have you done this for?

What do you like/dislike about this? What is good/bad/interesting about this? What have you learned about yourself from doing this?

Task 3 (end of week 7 and 28): describe how you are currently feeling

How do you feel about your work placement at the moment and what and/or who is impacting on these emotions?

Follow up question: looking back at other things you have experienced in your life, are the emotions you are experiencing now unfamiliar to you? Looking back at your previous diary entries, how have your feelings changed since you started your placement (if at all) and what factors have influenced this?

Task 4 (end of week 10 and 31): describe any changes you have experienced

Look back through the entries you have made in your diary so far. How have you and/or your placement experience changed since you started work and how have you responded to these changes?

Follow up question: eg what strategies have you been using to succeed/cope? How have you been feeling?

What have you been thinking about? What have you learned about yourself?

Task 5 (end of week 13 and 34): describe an unplanned event

Think about an unplanned or unexpected event at work that has had a significant impact on your work placement experience.

Follow up question: eg what happened? Who was involved? How long did this go on for? How did it make you feel? What made you respond in this way? What strategies did you use to manage the situation? What have you learned about yourself from this?

Task 6 (end of week 16 and 37): tell me about a problem or challenge

Tell me about a problem or challenge you have had to deal with on placement.

Follow up question: eg what was involved? Why was this a problem/challenge for you?

Have you experienced anything like this in the past? How did you cope?

Task 7 (end of week 19 and 40): tell me about an achievement or success

Tell me about something you are proud to have achieved or succeeded at on your placement so far.

Follow up question: what did you do? Why are you so pleased with this? What feedback did you receive?

How did you feel?

The app was introduced to collect longitudinal data for a doctoral study exploring the lived experience of placement students but it soon became apparent that the tool was offering benefits for the students. A task was therefore set for completion at the end of 22 weeks of placement for the students to reflect on their use of LoopMe itself to enhance understanding of student engagement with the app. Students were asked to respond to three questions:

- 1 What are the advantages and disadvantages of the LoopMe App?
- 2 In what ways does creating loops help you with your placement?
- 3 What prevents you from looping more often?

Outcomes

Seventeen students provided feedback on the LoopMe application. Based on a 5-point likert scale of emojis, 15 students gave the app a positive rating, one a neutral rating and only one provided a negative rating. Analysis of the tags attached to the students' posts shows that the app was used most for recording positive experiences (Table 2). Negative emojis were attached to only 47 loops, accounting for just over 10% of the total number of posts.

Table 2. Top five tags used by students to describe their loops

Tag	Number of times used N=1,091	Percentage of total number of tags
I feel driven to succeed	178	35.3%
I feel more confident about doing my job	151	30%
I felt successful	128	25.4%
I'm fitting in	123	24.4%
I've developed a new skill	84	16.7%

Students made 456 posts over the year, an average of nine posts per student. As shown in table 3, the use of the comments function stimulated a substantial level of additional tutor-student interaction. This appears to indicate the app offers an effective means of communication with students in a remote learning location.

Table 3. Engagement measured by number of reports and comments

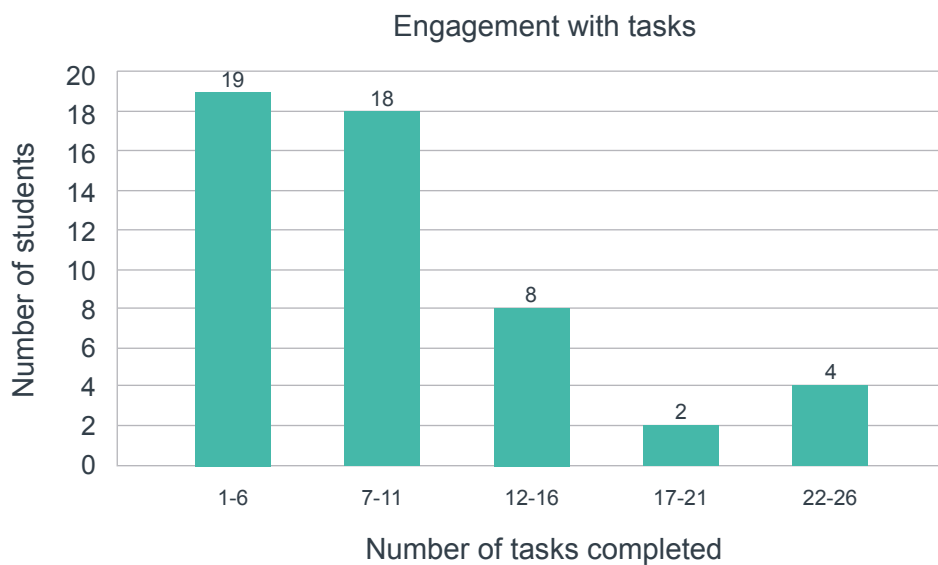
Task	End of week	Number of students completing task (n=51)	Total number of task posts*	Number of tutor comments	Number of student comments	Total number of interactions
Tell me how your first week has gone	1	48	48	66	22	136
Describe a regular event, task or activity	4	13	100	122	45	267
Describe how you are currently feeling	7	8	70	80	31	181
Describe any changes you have experienced	10	4	49	26	11	86
Describe an unplanned event	13	6	55	59	22	136
Tell me about a problem or challenge	16	24	26	28	8	62
Tell me about an achievement of success	19	20	23	24	8	55
What do you think of LoopMe?	22	16	18	16	1	35
Describe a regular event, task or activity	25	15	18	18	5	41
Describe how you are currently feeling	28	13	17	16	4	37
Describe any changes you have experienced	31	11	14	12	5	31
Describe an unplanned event	34	4	8	4	1	13

Task	End of week	Number of students completing task (n=51)	Total number of task posts*	Number of tutor comments	Number of student comments	Total number of interactions
Tell me about a problem or challenge	37	3	5	4	1	10
Tell me about an achievement or success	40	3	5	4	1	10
		188	456	479	165	1,100

*Some students submitted more than one report for each task

Some students posted more than others (Table 4). The highest user responded to every task, making 27 posts in total and actively engaging with follow-up questions presented by the tutor. However, five students made only two posts each and one commented that using the app “felt like a chore”.

Table 4. Engagement with tasks by student



Despite the flexibility of the app allowing students to create entries on their mobile phones in any location, the challenges of a busy full-time workload conflicted with the need for regular use. One student indicated that finding time to make unprompted posts or 'free loops', rather than responding to the set tasks, was difficult.

"Working full-time as well as having assignments and extra curricular activities means that I forget to do the free loops therefore I do not loop as often."

This suggests that linking use of the app into formative or summative tasks may motivate students to use the app more regularly. The app was seen by many students as a tool to support completion of the summative reflective assignment, for example.

"An advantage is that I have reflections from each checkpoint of my placement journey which I can recall when completing my coursework."

This and diary fatigue may explain why the frequency of posts dropped substantially once the summative assignments had been completed (see Table 3). However, one student indicated that an instrumental use of the tool would lead to less effective outcomes.

"I feel like LoopMe is beneficial if you view it as a tool rather than a task. If you're only using it because you have to you won't reap the benefits."

Despite difficulties finding time to work on the app, students did appreciate several benefits. Favourable comments were made about the ability to enter into a 'conversation' with the tutor about their experience through the comments function, which they found helped them to deepen their level of reflection.

"The main aspects for me is the questions [my tutor] sends back. As these are the questions that get me to thinking and truly reflecting on what I've done."

"It allows you to get your thoughts out and feel like you're talking to someone."

The app also provided students with a means to identify and celebrate their achievements, and identify the progress they had made over time. This appeared to have a positive impact on self efficacy.

"It is also useful to see how my job role has changed as time has gone on, it lets me know about how much I am learning here and how my managers are trusting me to do more which is really rewarding."

"It helped boost my confidence knowing I can share my accomplishments."

Perhaps most importantly, the set up of the app meant students perceived it as a safe place for reflection that helped them to cope with the fluctuating emotions of their placement journey.

“I think that LoopMe provides a safe space where I can complain, express joy, get angry with my words, share my experiences, tell you about my new friends and our adventures, share my achievements, failures and difficult situations and a lot more but still, you will not judge me...I like seeing your comments under my loops whether you are happy for me being happy or just trynna [sic] be a supportive ‘voice’.”

In summary, the outcomes from this pilot study provide encouraging indications that social media style applications can be used effectively to support pedagogic and pastoral interactions between tutors and students during work placements. Further research would be helpful to compare the impact of technology-based interventions with other methods such as peer-led active learning sets that may also address the need to support work-integrated learning with a social learning environment. Extension of the project across other disciplines would also be of interest. The introduction of a quantitative research approach at this stage to measure the impact of using the app on key employability outcomes, including work and career self efficacy, will advance this project further.

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Work-integrated learning – making it authentic, minimising risk

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The value of work-integrated learning (WIL) is widely recognised. Various positive outcomes that can be achieved for students have been identified. These include building their capacity to take responsibility for their work (Caldicott et al, 2022), enabling students to link theory and practice (Bjorck, 2021), developing work values and human capital (Ng, Wut and Chan, 2022) and enhancing employability (Jackson and Tomlinson, 2022), as well as developing a range of positive skills such as teamworking, communication and critical thinking (Jackson and Bridgstock, 2021).

Dalrymple et al (2021) explain that work-based learning involves structured activity in a workplace setting, whereas WIL encompasses a broad range of activities. Dollinger and Brown (2019) comment there are many activities delivered in higher education (HE) that have been labelled as WIL, leading to confusion and hampering analysis. This case study discusses WIL characterised as “embedding learning activities and assessment that involves students in meaningful industry and/or community engagement” (Jackson and Bridgstock, 2021, p726), and details the learning gained by academic staff delivering an optional final-year undergraduate capstone 40-credit module over a period of 14 years, titled Management Consultancy Project. It explores the delivery of the WIL activity in terms of making the experience ‘authentic’, while at the same time minimising the risks that inevitably result when ‘external’ parties are involved (Fleming and Hay,

In each academic year teams of students [ideally eight students in each team] work with external clients [one team per client], who have a suitable business issue or problem for the students to address as a consultancy project. The number of external clients is restricted to ensure adequate oversight and guidance can be provided by the academic supervisors, with a maximum of eight external clients accepted in any academic year.

The Management Consultancy Project module is a popular option. However, there is limited capacity, due to the team sizes and the number of clients that can be appropriately supported. Having a cap for students and clients has been learnt by hard experience and is necessary so that engaging in the module is a positive experience for students, clients and indeed academic staff. If over-subscribed, access to the module is determined by the student’s stage 2 average. This does raise issues of equity of access to WIL experiences (Gribble, Blackmore and Rahimi, 2015). It is important to acknowledge that although the value of WIL is recognised, “without appropriate resourcing around WIL, systematic inequalities for preparing learners for work will prevail” (Dean et al, 2023, p142).

WIL learning requires access to an authentic work experience (Dollinger and Brown, 2019). Engaging potential clients is therefore an essential first step and has never been problematic. However, identifying the ‘right’ clients for the WIL module is critical. When agreeing an initial project brief it is important to determine that the project is not business critical or urgent but has the potential to add real value, thereby providing students with the ‘authenticity’ required. ‘Contracting out’ the recruitment of clients can be useful, but only to the point of introducing the potential client to the Module Leader. Experience has taught the importance of the Module Leader contacting the client

and discussing their expectations and the appropriateness of overall project scope; ensuring its suitability and reviewing any possible risks involved. It is also important to make the clients aware of the structure of the module, such as timescales, assessments and how the academic supervision will be conducted. This does mean that the Module Leader has to be competent in managing external client relationships.

It is important to ensure that clients acknowledge the students are not undertaking an internship or work experience so cannot be given additional 'tasks' and are treated as an 'external' provider of a specific service. They can expect the students to act 'professionally', while at the same time remembering they are students. At the end of the project, each client receives a report [8,000 words] detailing the outcomes of the research undertaken by the students and their subsequent recommendations, addressing the original brief. The student group present their research and recommendations in a formal 20-minute presentation, and both this and the report are assessed. In addition to the report, an 'appendices' of the research data collected is provided by the students. Feedback from clients is that this appendices document is often the most valuable outcome, providing them with the evidence to support decision-making about implementing the recommendations offered by the students.

Students often voice their desire to work for 'well-known' corporate clients. However, our experience is that in larger organisations student groups can get 'lost', encountering issues in navigating the internal structures of the organisation. The focus is now on working with SMEs or third sector organisations, while also providing a range of interesting and challenging projects, such as new business development, sustainability, talent acquisition or building brand awareness. Research by Kay et al (2019) confirms that projects in such 'smaller' organisations promote development of entrepreneurial skills, which are increasingly relevant to students' future career needs. Regardless of size or sector, the critical issue is having an individual in the client organisation who is willing to engage with the students as a 'main contact'.

As students are undertaking external 'work' for a client under the supervision of the University, mitigating inherent risks is paramount, and therefore verification of health and safety and insurance status is critical. Although the project outcomes are 'owned' by the client, the right to use these for teaching purposes is retained, and it is important to confirm that the implementation of any of the recommendations is at the client's own risk. Minimising risk is also a reason for not charging the clients.

Offering students choice of clients and projects helps to foster their ownership of the WIL activity, promoting their self-authorship (Caldicott et al, 2022). The allocation of students to clients starts with a 'speed-networking' meeting. The clients sit at separate tables and small, self-selected groups of students rotate around the tables, talking to each client for around 20 minutes. Following this meeting the clients indicate any students that 'stood out', and the students indicate two clients they would like to work for and one they do not wish to work for, as well as confirming any conflicts of interest. Based on the client input, the student 'votes', plus information on team working styles, nationality and gender, the Module Leader then allocates students to their team. This is not a perfect science, similar to team allocation in any 'real' organisation.

The initial project brief provides a basic overview of the business issue or problem. Once allocated to a team the students are responsible for working with the client to determine specific outcomes required and what research activities are needed to accomplish this. They are also responsible for the management of their group, their client and the project. However, this requires active academic supervision, supporting the students in identifying relevant theoretical constructs and research methods, ensuring that the work being undertaken adheres to required ethical standards, minimising any potential reputational risk to the University, which is often overlooked as an inherent danger of WIL delivery (Fleming and Hay, 2021).

Supervision on the module is undertaken by a minimum of two academic colleagues, to ensure cover if any issues arise. Students are informed they are expected, over semesters 1 and 2, to individually commit 400 hours to the module. In terms of academic contact time, there are 21 hours of timetabled contact hours plus 20 hours of curated online learning. The module has evolved from an approach of weekly tutorials held with each team, to 10 x 1-hour tutorials held with each team and 3 x 2-hour whole cohort workshops. The workshops provide practical instruction on project management, the Module Code of Conduct, which details the responsibilities of the student teams in terms of client management and adherence to the ethical standards of the University. In addition, eight hours are allocated per team for the supervisors to review and provide feedback on drafts of all communications and information created by the students for their client or to any other external parties. This is a further step in managing the potential reputational risk of inappropriate or poorly drafted ‘work’ being shared with external parties.

During the first month of the project the students work on drafting a formal research plan. No primary research activity can be conducted until the research plan has been confirmed with the client and the academic supervisors. This ‘planning’ phase of the project is important in helping the students transform into a team, and fully appreciate the scale of work they need to deliver. Jackson and Bridgstock, (2020) and Jackson and Tomlinson (2022) comment on the value of WIL in developing professional readiness, which this planning phase helps to consolidate. The experience gained from delivery of this WIL approach, is that insisting on agreement of a detailed research plan is important in enabling students to visualise (Jackson and Bridgstock, 2020) and understand how they will be applying their theoretical learning to the client brief. The research plan also acts as a ‘term of reference’ and is a further element in mitigating the risks inherent in such WIL activity.

As outlined in this case study, delivering an authentic experience for students requires significant effort, and often a shift in approach by academic staff, so they act as ‘coaches’, supporting the students to make their own decision about their clients and projects. Students value the authenticity of working with clients, and as one student commented, “this is the only module at university that I think will actually prepare me for working life”. However, choosing a team-based module can be seen as risky, as they are reliant on other students actively contributing. To mitigate this risk only 50% of the module assessment is based on group work, which is also peer reviewed. Feedback from students on the module is that a peer review, which has both positive and negative consequences, is essential for them to ‘take a risk’ on opting for the WIL experience. The other 50% is an individual reflective

assignment on learning gained from the module. This requires them to actively explore their individual experiences on the module, with many commenting on the final client presentation as being when they recognise how they have developed personal authority and expertise, reinforcing the value of WIL as an opportunity for students to “emerge as professionals; navigate relationships with others; and build their sense of self” (Caldicott et al, 2022, p388).

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Work placements and graduate outcomes: self-selection bias and employability metrics

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Background

To enhance graduate skills levels and to ensure effective transition between higher education (HE) and the labour market, universities have adopted work-integrated learning (WIL) strategies that integrate theory and work-related practice in curriculum design. Among the different forms of WIL, work-based learning combines academic learning at the university with practical experience in the workplace, such as work placements incorporated in degrees (also known as ‘sandwich degrees’) and internships (Dalrymple et al, 2021).

In this case study, we discuss the nexus between work placements¹ and graduate employability, with particular emphasis on two key issues that matter for understanding the ‘added value’ of work placements in terms of graduate outcomes. Firstly, despite the fact that work placements can benefit students’ employability, it is not clear whether such benefits arise because of the work placement experience itself, or because students with certain characteristics, background and/or motivations are more likely to go on work placement than others. This issue is known as *self-selection bias* (Gertler et al, 2016) and can be crucial to determining the impact of work placements on graduate employability. For instance, more academically oriented or motivated students may be more likely to do a work placement, when they would have achieved better graduate outcomes (for example, find better-paying jobs) even if they had not done a work placement. In their review of the literature on work placements, Atfield, Hunt and Luchinskaya (2021) reported that most studies looked at associations between work placements and outcomes without considering the self-selection issue. Therefore, there is a gap in the empirical literature studying the effect of work placements on graduate employability.

Secondly, there is a wider discussion on the limited focus of standard employability metrics, such as being in full-time or part-time employment and earnings, which feed into university rankings that influence the public’s perceptions of universities’ teaching quality and contribution towards students’ employability. Alternatively, the Higher Education Policy Institute has pointed out that it is worth looking beyond the typical employment metrics and considering using other indicators of graduate success, such as students’ reflections on their careers and wellbeing, as collected from the Graduate Outcomes survey (Jones, 2023). The higher education literature on the measurement of students’ subjective and objective career success (Jackson and Bridgstock, 2018; Inceoglu et al, 2019) has raised concerns about this typical narrow focus, and the lack of subjective measures of career success as part of graduate outcomes that are considered by stakeholders.

1 We focus on work placements that are embedded in the curriculum (eg they are credit bearing and assessed) in the form of a year-long fixed-term employment contract with an organisation.

This case study presents research on the effect of work placements on graduate outcomes addressing these two key issues (Arsenis and Flores, 2023a). Propensity score matching (PSM) is a statistical method that is widely used to deal with self-selection bias. This method involves the identification of a comparison group that resembles the characteristics of the group that participated in a programme. In this case, the programme is the work placement, and the two groups are the group of students who went on placement and the group of students who did not go on placement. This case study reports and discusses results that are based on the application of this method. While other programme evaluation methods exist (such as randomised assignment and instrumental variables), PSM is the most appropriate for the work placement setting.

The second issue is addressed by adding career fit to the standard set of graduate outcomes (ie earnings, permanent employment, full-time employment). While the latter graduate outcomes follow the paradigm of focusing on typical objective measures of employability, career fit is a subjective measure where the graduate states whether their current job is aligned with their career plans or whether the current job was the type of work they wanted. Of course, this is only a first step towards a more inclusive approach to graduate employability, and there are other subjective measures (such as the graduate's level of anxiety and happiness) that future studies can incorporate in their analyses.

The theoretical framework that underpins this empirical exploration is the Graduate Capital Model (GCM) as introduced in Tomlinson (2017). The GCM is composed of five forms of capital: human, social, cultural, identity, and psychological capital. Manifestations of these capitals' development are evident during the work placement experience. For example, work placements enhance human capital, which involves skills and knowledge that make graduates more productive, as students learn from tasks they undertake and develop transferable skills like time management and teamwork (for example, see Reddy and Moores, 2006; Arsenis and Flores, 2021; Hughes, Mouratidou and Donald, 2023). Similarly, work placements allow for the development of social capital, which refers to networks and relationships that help students identify graduate job opportunities, through students' relationships with their line managers and experienced co-workers (Jackson and Bridgstock, 2021). All in all, the GCM's constituent capitals offer salient theoretical linkages upon which this study's empirical associations are based.

Methodology

A dataset of three recent cohorts (2016-17 to 2018-19) of economics graduates from the University of Surrey, UK, was used to explore empirically the association between work placements and graduate outcomes. This is a rich dataset of student characteristics including demographics, educational background, academic achievement, and participation in the work placement programme. Additionally, this data was matched with graduate outcomes and job characteristics from the annual surveys conducted by the Higher Education Statistics Agency. From a total of 557 economic graduates across the three cohorts, around 47% graduated with work placements. Because of the surveys' varied response rates (eg just over a third of respondents reported their earnings), the samples used in the statistical analyses range from 165 to 185 graduates.

Our study focuses on earnings, permanent employment and full-time employment as objective graduate outcomes but also adds career fit as a subjective outcome. Further, two groups of students are identified, those who participated in the work placement programme and those who did not. Economics students interested in a placement year apply for placements during the second year of their studies and, if successful, they go on placement in the third year, returning to university the year after to complete their undergraduate course. If unsuccessful, they join those who do not want to do a placement and continue their studies, completing their course in three years. The participation is optional, and while the University offers relevant support, placements are not guaranteed. Work placements are remunerated (it is very rare that a placement is unpaid) and the typical duration is between 10 to 12 months.

The empirical strategy consists of different methods. To examine the association between work placements and graduate salaries we used ordinary least squares (OLS), a standard method that allows us to estimate the average effect of student participation in the work placement programme on salaries and control for several other factors that may influence salaries. To analyse the effect of work placements on full-time employment, permanent employment and career fit, we applied a discrete-choice, logit model, because these are binary outcome variables (ie they only take two values).² Further, to address the self-selection bias issue we applied PSM. Therefore, there are two sets of results for each outcome, one using the OLS (for salaries) or logit (for binary outcome variables) models, and the other using PSM.

Findings and implications

The findings are summarised in Table 1. The OLS results show only weak evidence that work placements matter for graduate earnings. While the initial results suggest a 6.5% salary premium for graduates who completed a placement against those who did not, this gap no longer holds once we control for self-selection. However, other factors included in the model, such as school background, job location and industry, do matter for earnings. Regarding the type of employment, the logit estimates present a similar picture, mostly suggesting no effect of work placements on permanent or full-time employment. Conversely, the results show a sizeable effect on career fit. In particular, the logit model indicates that placement graduates are about 17 percentage points more likely to have a job that is aligned with their career aspirations (or it is the type of job they want) than graduates who did not go on placement. This difference reaches approximately 21 percentage points after controlling for self-selection. Finally, once again, job industry is found to matter for employment type and career fit.

2 The variable definitions are: full-time employment is equal to one if the graduate reported to be on full-time employment and zero otherwise; permanent employment is equal to one if the graduate reported to be on permanent contract and zero otherwise; career fit is equal to one if the graduate reported that the main reason to take up employment was because the job fitted their career plan or was the type of work they wanted and zero otherwise.

Table 1. Effects of work placement on graduate outcomes.

Controls	Salary	Permanent employment	Full-time employment	Career fit				
	OLS	PSM	Logit	PSM	Logit	PSM	Logit	PSM
Work placement	0.0652*	0.0090	0.0749	0.1505*	0.0747	0.0243	0.1711**	0.2131**
Demographics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Educational Background	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Academic achievement	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Job characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cohorts	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Selection bias	No	Yes	No	Yes	No	Yes	No	Yes
Observations	167	167	185	185	185	185	185	185
F	6.19							
p-value	0.0000							
R2	0.3065							

Note: The logit and PSM work placement estimates are the partial effects of placement on each of the binary outcome variables. The PSM shows the average treatment (doing a placement) on the treated (students who did a placement) effect. * denotes significance at the 10% level, and ** at the 5% level.

Important implications stem from these results. Evidently, self-selection plays an important role in determining the impact of work placements on graduate employability, and future studies must attempt to address it. The PSM is a widely used and well-documented technique, but it has limitations, one being that it is solely based on observed characteristics (Gertler et al, 2016). But bias may arise from unobserved characteristics, a scenario that is not unlikely in this context. For example, St Clair-Thompson and Chivers (2019) show that among a sample of psychology students, students who intended to go on placement were more conscientious than students who did not have this intention. And conscientiousness appears to be linked to career decisions (St Clair-Thompson and Chivers, 2019). Indeed, the career fit findings support this hypothesis. Addressing self-selection is a priority in this context because unreliable results may mislead stakeholders' actions as they attempt to enhance students' employability. Surveys that capture students' characteristics and intentions on their participation in work placements could help deal with the self-selection issue.

Another more concerning matter that is tied to self-selection is about placements' accessibility and, more broadly, equity of participation in WBL in higher education. Indeed, work placements may be viewed as a manifestation of pre-existing inequalities among students (Allen et al, 2012). While, in principle, placement programmes are available to all students who enrol in the relevant courses, not all students may have the necessary resources as well as cultural and social capital to pursue such opportunities. Securing a placement not only requires effort and persistence during the application process but a proactive attitude that begins on enrolment in a course. Academic achievement during the first year of an undergraduate course is positively associated with both the chances of securing a placement and its earnings (Arsenis and Flores, 2019; Arsenis and Flores, 2023b). However, money-constrained students who work part time are disadvantaged, facing lower chances of securing a placement. Moreover, the application process to secure a placement is demanding, and students whose socio-economic background offered them some early development of their social and cultural capital will enjoy better chances of securing a placement than students without such background. These issues are not only important when attempting to deal with self-selection bias, but they challenge the principles of diversity and inclusivity that universities appear to champion nowadays.

Finally, the results draw attention to the implications of the omission of subjective employability metrics and over-reliance on more traditional ones. Surely, earnings and employment contracts matter for graduates and the universities they graduate from and they should continue to be a staple of the relevant public discourse. However, such metrics only offer a short-term view of these graduates' employment prospects. Career fit offers a different, longer-term view of these prospects. Early career alignment will lead to quicker career progression and long-term satisfaction. Of course, some graduates may not be able to identify the career that is right for them within the first few years after graduation. Still, subjective metrics can offer valuable information about graduates' career journeys, and follow-up surveys can shed light on those subjective outcomes at a later stage. If employability really matters for universities, they cannot afford to ignore their graduates' views and feelings about their careers.

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Career activation programme

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Background

At City, University of London, we celebrate that our students come from diverse backgrounds. This can often mean they have to overcome a unique set of obstacles which disrupt their ability to prepare for their future careers (McCafferty, 2022). As a result, for some of our students, career success is influenced in part by their personal circumstances, such as balancing studies with part-time work, caring responsibilities or a long commute to campus. Recognising this, the City Careers and Employability department created the Career Activation Programme (www.city.ac.uk/career-activation-programme), which embedded in the core curriculum two key components of employability development shown by research to support the long-term career success of students. As well as making employability support structurally unavoidable for all students as completion of Career Activation Programme modules is a compulsory requirement, regardless of their background or other barriers, the Career Activation Programme had the further benefit of improving the consistency of employability support across City's schools, which had previously been varied. The introduction of the Career Activation Programme chimes with government policy developments such as the Teaching Excellence Framework, which increasingly expects universities to have a clear institution-wide narrative in relation to student support, including employability. Implementation of this ambitious strategy was completed in 2022-23; all undergraduate courses have 'career focus' education and professional experience as core, credit bearing components.

The Career Activation Programme is innovative in two respects.

- 1 Sector leading. To our knowledge, we are the first large UK university to have embedded employability education and professional experience as two distinctive, core elements in all undergraduate programmes. The scale of the Career Activation Programme is notable; achieving consensus for change to the core curriculum for programmes in six academic schools.
- 2 Institutional vision, personalised delivery. The contents of all 'career focus' modules are bespoke to individual programmes and the sectors that students from that subject typically enter. For example, our politics module, Practical Politics, highlights policy roles in diverse sectors and the skills relevant employers, such as the Civil Service, look for. All 41 career focus modules are core and credit bearing. Inherent in our commitment that all undergraduate students complete professional experience during their studies is enabling students to undertake professional experience in a format and at a time which suits them. We have created an innovative range of credit bearing professional experience modules that reflect diverse career paths relevant to the nuances of what employers in different sectors look for, implemented with the institutional commitment that students complete one.

Our strategic vision was based on the large-scale Department for Education research “Planning for success: Graduates’ career planning and its effect on graduate outcomes” (2017), which examined determinants of long-term success in the labour market. This research found that, while there are multiple variables that determine the outcomes of graduates, there are two ways in which universities can make a difference: supporting students to develop what the research terms ‘career focus’ by the time of graduation and providing relevant professional experience.

Approach

Career Focus methodology

The design of Career Focus modules was a collaborative process between the Careers and Employability department and each undergraduate programme team. Discussions focused on the nuanced employability needs and sector interests of the cohort, identifying where in the student journey the module would be most impactful for students and, in many cases, an existing core module which could be amended to include the employability content. Where there weren’t existing core modules that could be amended, new modules were designed. Care was taken throughout these discussions to design modules which feel coherent and meaningful to students and are likely to deliver an excellent student experience as well as positive employment outcomes. Mostly it was agreed that the optimal timing for this education is level 4. The consultative and partnership-focused way these modules have been designed means there is no ‘one size fits all’ approach; the design of the employability education is fundamentally rooted within the subject discipline. Teaching delivery is by Careers Consultants from the central Careers and Employability department who have been supported to develop their teaching and learning skills through learning, teaching and assessment qualifications. The undergraduate programme teams retain oversight of all quality assurance processes.

Professional Experience methodology

An encouraging aspect of the *Planning for success: graduates’ career planning and its effect on graduate outcomes* research (Department for Education, 2017), which forms the basis for the Career Activation Programme, was the finding that professional experience does not have to be as long as a year to have a positive impact on the long-term outcomes of graduates in the labour market. This inspired the creation of a range of work-based learning credit-bearing modules that enable City students to gain professional experience in a role and sector that interests them and at a time that fits with their other commitments and readiness. Below are example work-based learning module formats.

- + MicroPlacements: students complete a short, project-based placement in the summer.
- + Industry Projects: students work in small teams to propose solutions to an authentic organisational challenge presented by the employer.
- + Enterprise: students develop start-up business plans.

- + Community engaged learning: students work individually or in teams with third sector organisations for the benefit of themselves and the local community.
- + Discipline-specific formats: students gain experience aligned to specific occupations directly related to the subject area.

Some of these modules have the additional benefit of being delivered to interdisciplinary student cohorts, replicating the world of work. Modules are delivered by various teams across the institution in accordance with respective areas of expertise and available resource for the specific work-based learning activity. For example, MicroPlacements and community engaged learning modules are delivered by staff within the central Careers and Employability department. Industry Project modules are typically delivered as a collaboration between academics and employer engagement staff, either in school-based placement teams or the central Careers and Employability department and some discipline-specific formats are delivered wholly by academic programme teams.

Most courses have opted for enabling students to have a choice of work-based learning modules enabling students to have flexibility in choosing professional experience that is optimal for them. This model is referred to as 'core-elective': core as students are required to complete one of these professional experience modules and elective as they have a choice of modules.

Given that it has fundamentally changed every undergraduate programme in the university, implementing the Career Activation Programme has been a collaborative, whole institution endeavour. Particularly fundamental have been the following relationships:

- + academic schools, including the executive and programme director levels
- + Learning Enhancement and Development and the Quality Assurance and Academic Development departments who both play critical roles in curriculum development and quality assurance
- + employability-related professional service staff in departments beyond the central Careers and Employability department who deliver some professional experience modules
- + university leadership who have endorsed the vision at regular stages of the project
- + business-related university functions, such as HR and finance, to manage the investment required in new staff.

Implementation of the Career Activation Programme took four years. In 2019 the vision was created and committed to. In 2020 the investment budget was agreed and the new modules were created in 2021 and 2022. Implementation was completed in 2022-23.

Outcomes

Short, medium and long-term impact measures have been put in place to track the impact of the Career Activation Programme. Our short-term measures relate to feedback from students on their learning from the modules.

Pre- and post-career focus module learning gain surveys indicate that the majority of students are more aware of their career options (average 57% before the module and 82% after) and how their skills and values relate to these options (average 59% before the module and 85% after).

The impact of MicroPlacements is demonstrated by the following (2021-22) statistics: 92% of students strongly agreed or agreed that the MPP has helped them with career exploration and 94% of students strongly agreed or agreed that they are more familiar with a real-life work environment and processes.

Pre- and post-module learning gain surveys for industry project modules indicate that the majority of students were more aware of the skills that employers look for in graduates (average 70% before the module and 90% after) and have a greater understanding of project and stakeholder management and feel confident in applying this knowledge to in the real world (average 54% before the module and 100% after).

As the Career Activation Programme is a new development, we await to see change in our medium-term impact measure, career readiness as measured by our Careers Registration questions, or our long-term impact measure, the proportion of graduates in professional level employment/study in the Graduate Outcomes Survey.

Our experience of designing and implementing the Careers Activation Programme has a number of transferable learnings for other institutions:

- + the value of having a research basis: having a reliable, externally verified, empirical basis for the vision improved buy-in among stakeholders across the university
- + simple vision: being able to explain what the Careers Activation Programme was in simple terms which were easy to understand by time-poor stakeholders without a background in employability was valuable
- + considering your institutional context in project design: factoring in the nuances of your institutional culture and structures when planning for a project of this scale is critical as what is successful for a different university with contrasting ways of working may not be as effective.

Our next steps will be to continually enhance the quality of the Career Activation Programme modules in line with student feedback, the impact metrics and the changing labour market. We are also looking to enhance the inclusivity of our pedagogy through a QAA-funded enhancement project with the University of London and King's College London. This project will see us develop and evaluate a range of innovative teaching tools designed to ensure that all students are able to equally engage with and learn from their Career Activation Programme modules regardless of structural inequities.

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Academy without walls: work-integrated learning in community and professional settings

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Background

Community Education is a profession and academic discipline that strives to reduce social inequalities, through Youth Work, Adult Learning and Community Development. The discipline of Community Education at the University of Dundee has a long history of work-integrated learning programmes with practices ranging from work placements in professional settings, as in the BA (Hons) Community Education (BACE), to studies that require students to be in work, such as the BA Professional Development (BAPD) programme, and the work-based route of the BACE.

The programmes are grounded in the premise that the workplace can be a “place of learning, where everyday activities and experiences become a basis for inquiry” (Taylor, 2008, p366) and the pedagogical designs embrace the theory-practice interplay constructed to avoid a binary of workplace equals practice and university equals theory (Ryan, 2023).

The BAPD programme attracts students from a range of professional settings and student feedback points to the positive impact it has on their career progression (or indeed change), as well as being a catalyst for organisational learning. As Taylor (2008) further elucidates, learning materials, and module assessments such as Professional Inquiry Project (PIP), have been designed to encourage students to investigate their practice and critically reflect on their actions to “make connections to key concepts and theories and [to engage in] further action” (p366). In this way the nature of the work-integrated PIP inquiries facilitates learning, and action, from personal to organisational.

Embedding work-integrated approaches into programmes requires higher education providers to develop and nurture authentic relationships with professional partner agencies and, more so, to be prepared to enter into collaborations that disrupt traditional educational hierarchies in favour of models that see professional partners alongside academics as “equal bearers of educational knowledge and skill” (Wilson, Wayland and Murphy, 2023, p141). One such collaboration exists between the University of Dundee and Hot Chocolate Trust, a grassroots third sector youth work organisation that focuses on growing community with young people and “supporting them through their journey to become agents of change in their lives and communities” (Hot Chocolate Trust, 2022).

Studying on the BACE programme involves a module on youth work that is taught in collaboration with Hot Chocolate Trust, based off campus in their premises, grounded in work-integrated learning.

The module introduces students to collaborative practice with youth and community development workers and, importantly, with young people who are respected as active, learned, critical thinkers whose contribution to society is both important, and to be celebrated and learned from. This brings further challenges to academic hierarchies as students learn from the expertise of young people about their lived experiences of poverty, discrimination and marginalisation, and from their perspectives on the role of youth work as educative practice for positive social change.

Young people's voices in dialogue are central to the learning processes and the collaborative, pedagogical approach introduces an academy without walls perspective to learning. Findings from an ongoing action research project on this notably highlight the impact that the young people as educators have on the students – particularly on developing their learning, on the deepening of their values-led engagement, and on their general understanding of youth work practice:

“I think when you are learning from lecturers, you're hearing from their point of view, and theory and everything, but it's nice to just hear it from the young people's point of view...it's good to learn about youth work from their perspective.” – (Student BACE)

The research also highlights that students appreciate the role of the workplace as a dynamic, real-life learning environment that increases their understanding of youth work. Additionally, students emphasise the importance of academics and professionals working together with young people as co-teachers in the workplace, as a catalyst for their learning. Notably, alongside the impact on students, this approach also impacts on the academics and the professionals, and it has expanded their critical thinking and practice:

“It's a mutual respect and collaboration – the pooling of our resources and expertise with your resources and expertise to make something that neither of us could have done alone.”
– (Hot Chocolate Trust Staff)

While the work-integrated nature of the Community Education programmes aligns with the higher education employability agenda (Little and ESECT, 2006), crucially it is also grounded in the university's social purpose responsibilities by “subscribing to a definition of social transformation that embraces education for social change” (McEwan-Short and Jupp Kina, 2018, p235). Furthermore, through the co-creation of learning environments, in this case by academics, youth workers and young people, “ethical agency is developed as part of professional practice for public good” much as Martin (2017, 113) espouses. Importantly, such an approach to higher education programmes opens opportunities for new pedagogies to embrace work-integrated learning without losing sight of the critical nature of the Academy but while also recognising higher education's non-exclusive rights to thinking and knowledge creation.

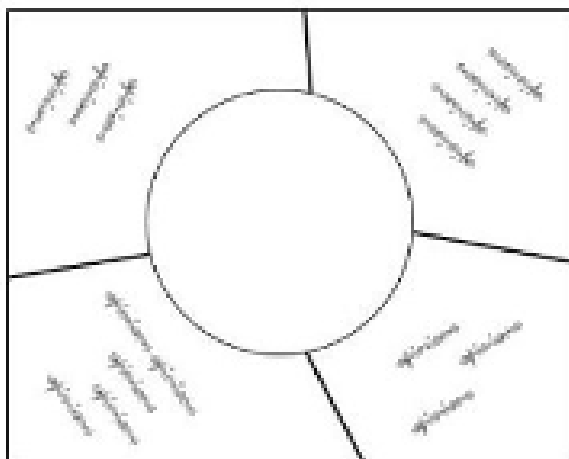
Approach

At the Advance HE symposium in Manchester in April 2023, the authors ran a workshop with around 50 participants to introduce their academy without walls approach, engage participants in discussion on their experiences of work-integrated learning, and to capture collective perspectives. Drawing on the strengths of Mezirow's (2000) experiential learning thinking, they facilitated a participatory activity using the dinner plate exercise. Commonly used in participatory evaluation that allows for stakeholder opinions to be heard (Cousins and Chouinard, 2012, and Cousins and Whitmore, 1998), the dinner plate exercise is a method of gathering both individual and shared opinions. The main advantages of this method are that, as well as giving opportunity to all the participants to voice their opinions, it is also dialogical and collaborative, thus many viewpoints can be considered, created and collated.

The purpose of using this approach was to gather delegate opinion from their practice and to engage in knowledge exchange with a view to confirming and enhancing our own practice. The workshop delegates were able to learn from each other and use this new knowledge to improve the student experience.

At the symposium all workshop participants were separated into groups of three to five with each group given flipchart paper. They were asked to draw a circle (a dinner plate) in the middle of the sheet and then to separate the exterior part into as many pieces as there are team members. This example (Figure 1) shows how the paper would be set up if there were four participants.

Figure 1. Dinner Plate exercise example



Once the outline chart was drawn, each of the participants was assigned their own outside area in which they could write their opinions in response to the question: “What do you consider to be the main priorities for successful work-integrated learning?”. The participants were given five minutes to think about this individually and to add their opinions from their own experiences and knowledge to their outside area on the flipchart sheet. Thereafter the small groups came together as one and discussion took place around these highlighted priorities. Participants were invited to strive to reach a consensus on what they believed were the three main priorities for successful work-integrated learning and to write them in the centre of the dinner plate. After the 10 minutes given for discussion and agreement a plenary session took place with each of the groups sharing their opinions with the workshop participants, thereby further collaborating on the creation of a collective perspective on work-integrated learning. The collective expertise of participants captured on the flipcharts was then further analysed by the authors using reflexive thematic analysis (Braun and Clarke, 2022).

Outcomes

The dinner plate flipcharts, as well as the plenary discussion, provided the key data which was then themed, coded and analysed. Three clear priorities emerged as vital to ensure high quality student experiences within work-integrated contexts: clarity, relationships and learning conditions (as illustrated below).

Figure 2. Model of key elements of work-integrated learning



These themes were well connected, highlighting that this area of learning is still relatively new; that there is still work to be done to make sense of it; and that the institutional demands of the Academy are not always aligned with workplace realities. As one participant said: “Education and industry are not always talking the same language. Our work-integrated learning project has been one solution to the miscommunication between expectation and reality.”

Clarity was the top priority reflected through the flipcharts and discussion, referring to purpose, expectations, relevance, outcomes, impact and measurement. The second priority was relationships across the various stakeholders, emphasising the need for these to be authentic, equal and collaborative. The third was around the necessary learning conditions for effective work-integrated learning, specifically the need for opportunities to be meaningful, real and experiential. It was also

repeatedly noted that these learning conditions must be firmly grounded in reflective practice, to help stakeholders grapple with the complex realities and dilemmas of professional and academic life, and to achieve the kind of transformative learning that Mezirow (2000) argues for.

This analysis closely resonates with the experiences of the Community Education team at the University of Dundee, across the range of work-integrated learning programmes. It has confirmed that developing such opportunities is neither simple nor straightforward. There are often competing agendas and unacknowledged power dynamics at play. Moving beyond these, towards a meaningful and mutually beneficial experience, requires a willingness to fully grapple with these complexities through deep and courageous dialogue. It will not work unless every party is fully committed to the process and respectful of one another's contribution.

There is much said of the impact of work-integrated pedagogies on students in terms of their real-life learning, enhanced employability skills-base, professional attributes, and indeed their personal development (Tran and Soejatminah 2016; Winslade et al 2023). This reflects our experiences as one of the BAPD students noted:

“The ability to reflect on my practice gave me a chance to appreciate what I had achieved in my current role.”

The data from the workshop exercise confirmed that building these foundations of authentic collaborations can lead to extraordinary changes for not just the students, but for all involved, and multi-dimensional learning can take place. It suggests that more work-integrated opportunities should be encouraged and thoughtfully developed in the name of transformative change. That said, investing in these collaborations and developing the necessary conditions takes time, commitment, and requires a high level of humility and intentional power sharing. We suggest this brings challenge to traditional paradigms and hierarchies of knowledge creation by opening new possibilities for learning and widening epistemologies. Ultimately, work-integrated learning using this model can contribute to elevating social purpose as the central focus of higher education.

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