AdvanceHE

MEMBER BENEFIT

Embedding enterprise and entrepreneurship in higher education: An Advance HE case study collection

Edited by Stuart Norton and Leigh Sear

Contents

Foreword

As we highlighted in the first of this case study series, there has been a significant growth in enterprise and entrepreneurship education within the higher education (HE) sector in the United Kingdom over the last 20 years. The UK national government and European Commission have invested in entrepreneurship education as a way of fostering entrepreneurial activity which will generate economic value. Students have also identified enterprise and entrepreneurship education as a way of supporting the journey into self-employment, as well as developing commercial awareness and other 'soft skills' required by employers (The British Academy, 2017). Finally, a number of business surveys have highlighted that small businesses are facing a management and leadership shortage, and larger businesses have a need for employees who are orientated to the development of new business initiatives and ventures as a way of supporting business improvement and competitiveness.

Within higher education institutions (HEIs), this growth in enterprise and entrepreneurship education can be seen in:

(i) the diversity of programmes and modules within the curriculum;

(ii) the range of extra-curricular activity offered to support students in developing ideas, engaging with external stakeholders and starting a business; and

(iii) the rise of regional and national competitions which provide an opportunity for students from different institutions to exchange experiences and learn from each other.

While the growth in enterprise and entrepreneurship education has led to increasing diversity in provision, there remains a number of challenges to embedding enterprise and entrepreneurship in education in disciplines beyond the domain of business and management. These challenges relate not only to the language of enterprise and entrepreneurship but also perceptions of staff and students as to its perceived value, extent and nature of relationships with external stakeholders.

Despite these challenges, what we do know is that enterprise and entrepreneurship education can add to the experiences of students. A growing evidence base highlights the value of developing enterprising and entrepreneurial skills in learners; both in terms of facilitating the creation of new ventures while in education and upon graduation, but also by enhancing their skills, values, attributes and behaviours relevant to all manner of employment opportunities. To explore this topic, the Embedding Enterprise and Entrepreneurship Education collaborative project was developed itself as a true collaboration with Advance HE, SFEDI, the UK Government recognised Sector Skills Organisation for enterprise and business support, and the participating higher education providers across the sector. Designed to promote collaboration the project was grounded in sharing practice, developing innovative approaches and assessing the impact of change. Institutions involved in the collaborative project benefited from focused support on key issues, a safe space to share challenges and build networks of support, and implementing meaningful change. We are delighted to share a further five case studies with you from the project. These will enable you to learn and engage with

colleagues' experiences and developments as we work to enhance student success. The series brings some of the more emerging and conceptual work being undertaken across HEIs to embed enterprise and entrepreneurship learning through a variety of mechanisms, including:

+ A work-based learning challenge to engage regional organisations
+ Building effective cross-discipline teams to enhance enterprise ideas
+ An extra-curricular work-based learning approach through an enterprise and innovation lab
+ Identifying employability and enterprise opportunities within a programme of study
+ A digital skills accelerator (in a post-Covid context)

This is the second case study collection to be produced from the enterprise and entrepreneurship collaborative projects and concludes the current series through which we have explored how to embed enterprise and entrepreneurship education within a range of different academic disciplines. In so doing, it is hoped that the case studies will support experience exchange amongst educators wishing to add value through enterprise and entrepreneurship education. Key themes and common challenges may become apparent, what is clear is that while it's a complex area, it is important, and we welcome sharing this range of practice and helping connect colleagues across the sector to ultimately enhance student success. For those reading this foreword afresh it will be new, for those returning it will be a helpful reminder, and for us, it points to the ongoing need to support and work collaboratively to make inroads to this critical area that ultimately enhances student success.

It leaves us to thank all contributors for their open and honest contributions. This series will help develop conceptual ideas, often exploratory in nature as they begin to identify, collect and design their approaches to track and measure demonstrable impact on students.

Stuart Norton and Leigh Sear

ABDN Grad Challenge: an enterprise and entrepreneurship opportunity for students at the University of Aberdeen

Background

Enterprise skills for employability

Work-based learning and enterprise skills go hand in hand with those real-world experiences providing students and graduates with the skills needed to thrive in the workplace. Work-based learning provides an opportunity for students to reflect and understand how they can connect skills and their behaviours to the workplace, professionalism and their wider employability (Jackson, 2017). The ability for graduates to be able to flex with a complicated and ever-changing work environment is currently a challenge for universities to overcome. One such solution is to use work-based learning opportunities, and interactions with organisations outside of the university, to develop these abilities in students (Jackson et al, 2022). Furthermore, we know that the vast majority of employers (88% in the Institute of Student Employers' 2020 survey) value students with work experience, due to them arriving equipped with better skills for the workplace (Hooley, 2020). A recent survey of business leaders by recruitment consultants Michael Page UK highlights skills such as intrapreneurship and innovation as key drivers to being successful in the workplace with 69% and 72% respectively highlighting them as crucial (Michael Page, 2021).

Transitioning into a virtual world

Covid-19 severely hampered work-based learning opportunities for students both within and external to the university. During this time there was a sharp increase in novel ways to engage with students during the shift to online and virtual learning. At the same time, all organisations and sectors were struggling with the shift to remote working and many simply withdrew student internships while they pivoted their own workforces to the new virtual world of video calls and home working (Feldman, 2021).

For most teaching activities, the shift to virtual delivery still allowed students to meet their intended learning outcomes, but for work-based learning where students are often required to be physically present in the work environment this was an impossibility. While virtual work-based learning initiatives are not a new idea, prior to the pandemic they were not a well-accepted approach to engaging students with work-based opportunities (Jeske and Axtell, 2014).

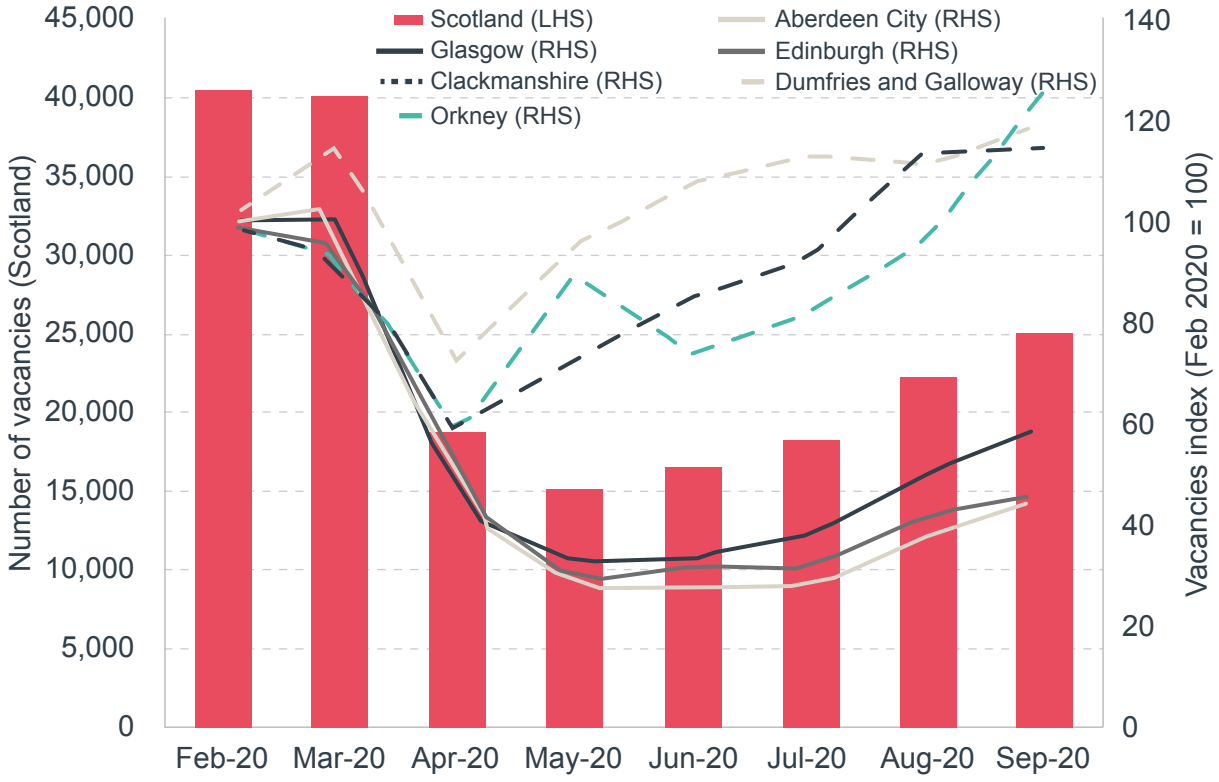
More recently, and as a direct consequence of Covid-19, many universities have created opportunities for students to engage with external organisations or have collaborated with partner companies to deliver opportunities for their students to engage with.

Local employability challenges

The University of Aberdeen Careers and Employability Service has created a successful work-based learning programme called the ABDN Grad Challenge, specifically created to engage regional organisations in the Northeast of Scotland with final year or recently graduating students who were entering a challenging job market due to Covid-19. Thus, the primary driver for creation of the ABDN Grad Challenge was to provide an opportunity for students to engage with some of our key regional external partners during a time of disruption and challenge. In determining the effectiveness and overall success of the programme we considered a number of factors, including: whether the numbers of students engaging with the programme met our targets; if these students were within our target audience; the level of interest and appetite to participate from employer partners and whether the programme addressed their needs; and the overall feedback from both the student and employer participants.

The Northeast of Scotland suffered a severe economic downturn during the summer of 2020 with one of the largest economic crashes across the UK, making the regional challenges particularly acute – in part due to Covid-19 and in part due to a downturn in the energy sector and shutting down of other prominent sectors such as food and drink, and the hospitality sector. Skills Development Scotland conducts detailed analyses through Regional Skills Assessments, which showed a third of the overall Partnership Action for Continuing Employment (PACE) activity for Scotland was in the Northeast during 2019-20 and 2020-21 (Skills Development Scotland, nd) – the PACE figures are a strong measure of the number of redundancies. Similar figures are mirrored in the local authority data for those individuals on furlough (Coronavirus job retention scheme) during the pandemic (HM Revenue and Customs, 2020). Furthermore, Aberdeen City did not see a strong bounce back, as evidenced in the number of job postings recorded when compared to other regions in Scotland (see Figure 1).

Figure 1: Number of vacancies across Scottish local authorities from February 2020 to September 2020
(Latest data on the Scottish economy – update 9 October 2020). Bar chart showing Scotland-wide job postings and line graphs showing various regional levels of job postings per month.



Approach

Strategic approach

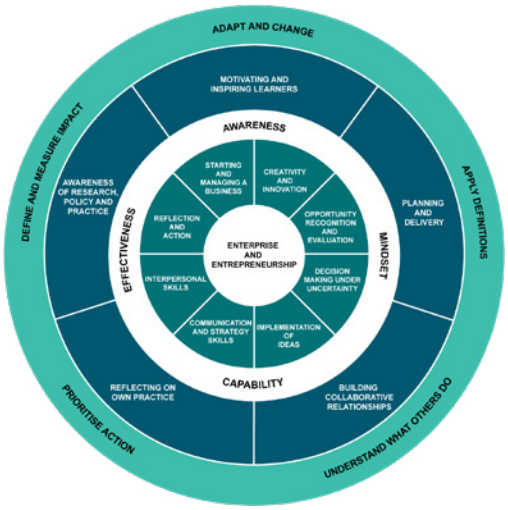
Further to the above, the ABDN Grad Challenge was also created to link student activity and the projects to the wider strategic vision of the University of Aberdeen. This 20-year strategic plan, called Aberdeen 2040, was created in 2020 and has four pillars – inclusive, interdisciplinary, international and sustainable (the University of Aberdeen, 2020). Within this strategy we have a commitment to our students, which states:

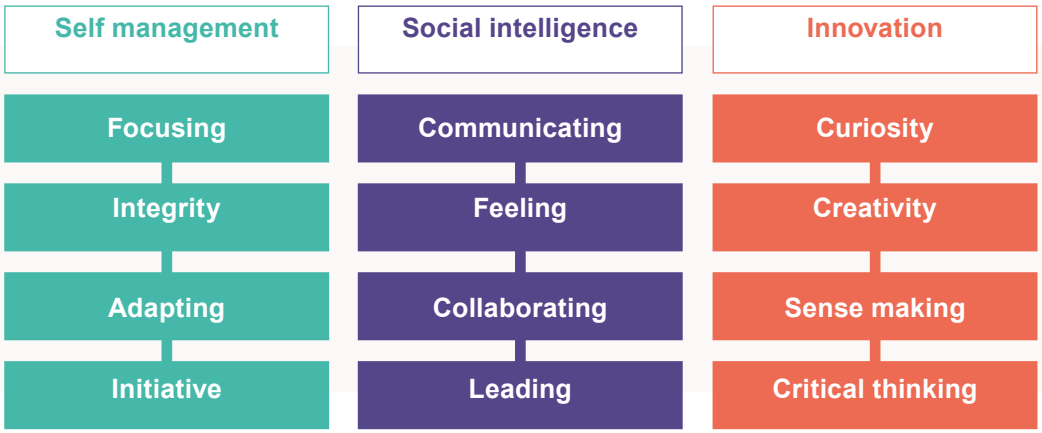
> "We will prepare our graduates to thrive in the diverse workplaces of the future by working with external partners and alumni. We will develop more challenge-led teaching, which enables students to learn by tackling real-world problems. We will provide more work-based learning, through placements and volunteering. We will make innovative use of digital technology to enable learning, and equip our graduates with digital skills. We will foster their intellectual development, creative thinking, innovation and entrepreneurship. Our students will grow in confidence and understanding, so that they can be change-makers across the globe."

These strategic aims provided the second driver for the creation of the ABDN Grad Challenge programme as it allows us to engage students in challenge-led learning through engagement with external organisations that have been able to set real-world problems for their respective organisations.

When planning our approach to the development of the ABDN Grad Challenge, we used our own educational strategy to underpin our thinking but we also reached out to other external frameworks such as the Advance HE Embedding Employability in Higher Education and Enterprise and Entrepreneurship frameworks (Advance HE, 2019, 2020), and the Skills 4.0 – Meta-skills Progression framework from Skills Development Scotland (Skills Development Scotland, 2018). These frameworks provided areas of commonality that focused our thinking and embedded our approach firmly in external pedagogies. The Advance HE frameworks have dimensions of 'motivating and inspiring learners', 'building collaborative relationships', 'creativity and innovation', and 'interpersonal skills'. The SDS Meta-skills Progression Framework also gives further areas such as 'sense making' (innovation pillar) and 'initiative' (self-management pillar) (see Figure 2).

Figure 2: The three frameworks used to develop the ABDN Grad Challenge methodology Top, Advance HE Enterprise and Entrepreneurship Framework; middle, Advance HE Embedding Employability in Higher Education Framework; bottom, Skills Development Scotland Meta-skills Progression Framework.





Further to the above frameworks, our participation in the Embedding Enterprise and Entrepreneurship in Higher Education Collaborative Project also provided discussions with colleagues from across the sector as an opportunity for the development of ideas at the various workshops and interactive sessions provided by this project.

We used these external frameworks and engagement with the collaborative project to craft the structure of our initiative so that we focused on authentic problems from our partner organisations, allowing students to engage and collaborate with these organisations and show their talents as innovators and change makers within our local communities.

Real-world challenges

Linking back to our Aberdeen 2040 strategic vision, we have now run two successful years of the ABDN Grad Challenge with challenges in the areas of inclusive, international and sustainable, all being pillars of our institutional strategic aims. The fourth pillar – interdisciplinary – is an integral part of the ABDN Grad Challenge as the teams of students are purposefully interdisciplinary with applications being accepted from final year students at either undergraduate or postgraduate level, and from any subject area of the university.

Both iterations of the ABDN Grad Challenge have seen the Careers and Employability Service consult with local organisations, allowing them to develop and align a challenge to one of the three themes. Table 1 summarises the challenges that have been set in 2021 and 2022.

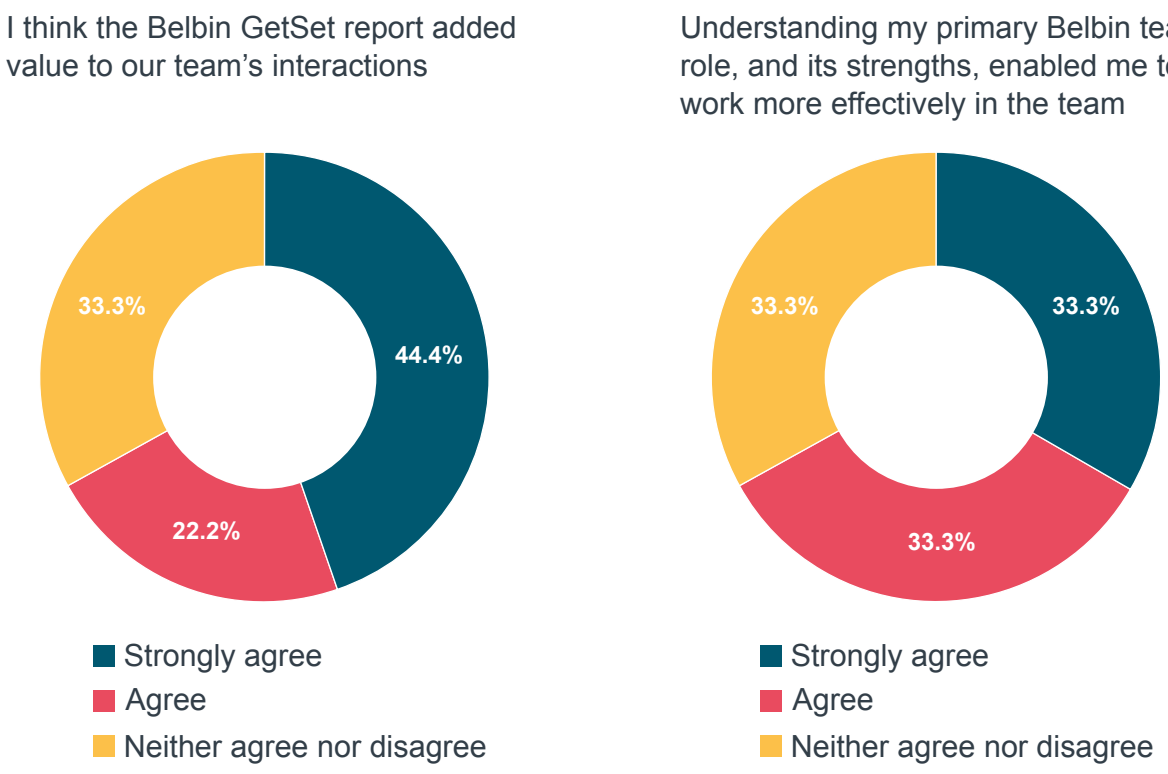
Table 1. ABDN Grad Challenge challenges provided by local organisations

2021 Challenges		
Inclusive challenge	**International challenge**	**Sustainable challenge**
Aberdeen City Council tasked students with developing a hate crime strategy and a procedure to report communications in the Aberdeen region. The challenge focused around identifying innovative, effective, accessible and sustainable steps towards creating activities or practice to increase confidence and awareness in reporting incidents of hate crime. Students were also asked to create a communications plan to address incidents of online hate and micro aggressions.	Aberdeen Football Club gave students the assignment of building the football club's brand reputation internationally. Students were tasked with identifying towns and cities around the world that have similar industries to Aberdeen and would benefit the club if they had a presence there. They asked students to identify ways in which the club could partner with other football clubs to bring commercial benefits and consider programmes that could drive commercial income internationally.	TechX, part of OGTC, is a regional organisation that invests in net-zero technologies and research. They asked students to think of ways to promote Aberdeen as an attractive place to build a sustainable clean energy business. They wanted students to consider all aspects that make a city attractive to small businesses, such as proximity to customers, the cost of offices, cost of living, quality of life, ease of commuting, how environmentally friendly the city is, and if the city has the facilities and services they need (eg research and development space, manufacturing facilities, lab space, an established supply chain).
2022 Challenges		
Inclusive challenge	**Sustainable challenge**	**Inclusive challenge**
Aberdeen Football Club asked students to develop promotion opportunities for the Aberdeen Football Club Women's Team under the umbrella of the Aberdeen Football Club brand. Students were asked to identify sponsorship opportunities and programmes or initiatives that would help to engage new fans and consider the unique selling point of Aberdeen Football Club Women's Team over their competitors in the Scottish football leagues.	Enterprise Rent-A-Car's challenge focused on enhancing sustainability in the travel industry. Students were required to give high-level recommendations with suggested action steps that Enterprise can take within the next five years to make themselves more sustainable as a company. Students were asked to provide a convincing evidence base for their findings through comparisons with other nations.	The Net Zero Technology Centre, previously OGTC, tasked students to identify solutions to the question 'what can the Net Zero Technology Centre add to our TechX offering to make it a more inclusive environment for our future founders and technology developers?' The challenge centred around their aspiration to encourage diverse teams of all forms and to increase the number of female-led or co-led start-ups that graduate from the TechX Clean Energy Accelerator and which have BAME representation.

The Challenge programme was aimed at final year undergraduate and postgraduate students and the marketing campaign focused on highlighting the areas of skill development, the themes that the challenges addressed and the ability to work with organisations. Communications were targeted to final year students via the graduating students information emails, targeted emails by course to highlight the skills development opportunities and through social media. Later marketing included details of the organisations participating.

At the point of application students select a preferred challenge theme to be allocated, and complete a Belbin GetSet report – a self-assessment of their personal strengths and weaknesses. Their most dominant team role is identified through this report. Belbin profiles are then used to allocate individuals to teams based on their dominant team role. This allows for the creation of optimised teams based on anticipated behaviours. A further advantage to the students of completing the Belbin team roles is the GetSet report will provide an insight into the individual's strengths within a team. Feedback demonstrated that students found this approach useful, both in adding value to their teams interactions and in enabling them to work more effectively as a team (see Figure 3).

Figure 3: Belbin GetSet report feedback
Left, agreement to the statement "I think the Belbin GetSet report added value to our team's internactions."
Right, agreement to the statement "Understanding my primary Belbin Team Role, and its strengths, enabled me to work more effectively in the team".

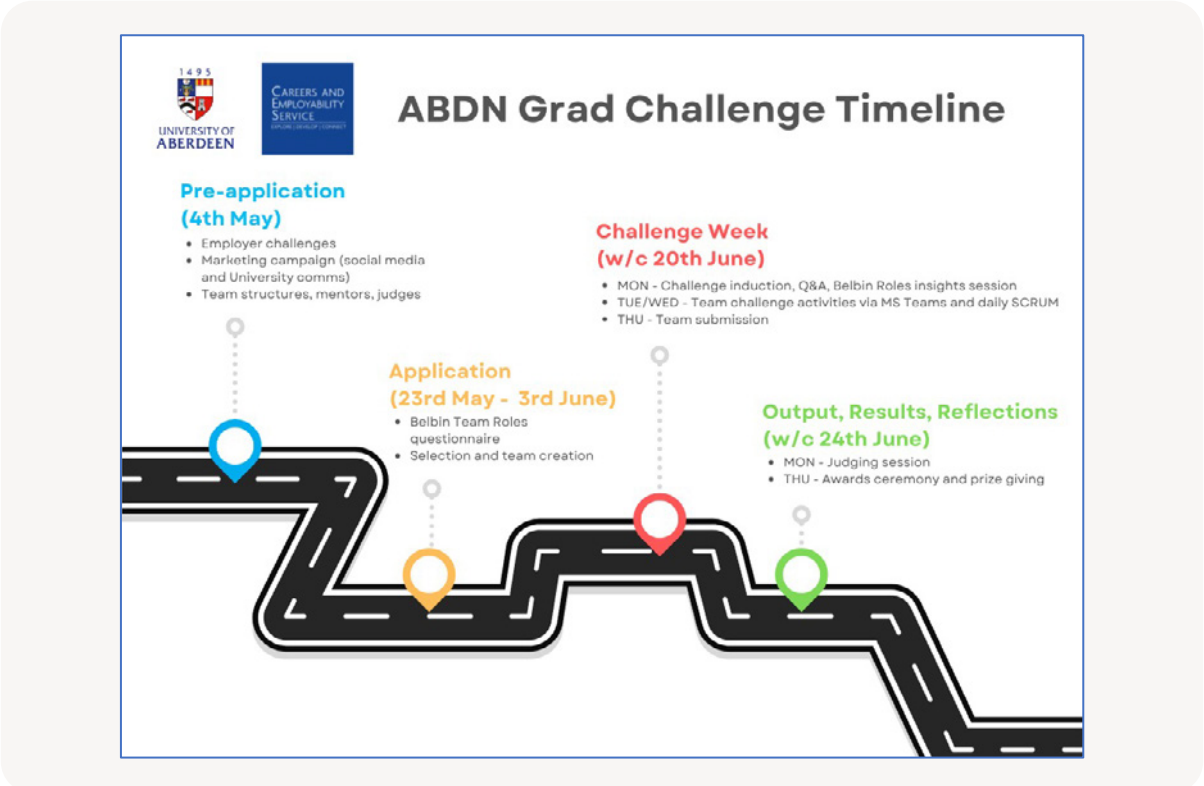


The aim for each team is to create a five-minute video presentation that outlines their solution to the challenge set. Alongside the video presentation, teams are encouraged to create supporting materials to enhance their proposal and provide further resources for the organisations they are working with. Teams are also given a mentor – usually a member of academic staff or professional service staff from the Careers and Employability Service – to support them throughout the process, from working through their ideas to creating their presentations.

Following submission of the presentations and supporting materials, a team of judges chooses a winner for each challenge theme, as well as an overall winner and a highly commended prize for the runners up. Students are scored on various aspects of the challenge: 1) their innovation and creativity, 2) feasibility of the proposal, 3) alignment to challenge brief, and 4) the quality of their pitch/presentation. There is also a prize for the top team member from each team as voted for by their teammates.

A timeline of the process for the 2022 ABDN Grad Challenge is shown in Figure 4, showing that while the event only runs over one week, it takes several months planning to identify employers, challenges and organise the event.

Figure 4: Timeline of the 2022 ABDN Grad Challenge



Outcomes

Following completion of the ABDN Grad Challenge, participants are asked to complete a short feedback questionnaire. Quotes below were taken from students who participated in the 2021 and 2022 events. The infographic shown in Figure 5 provides an overview of the overall participation across the 2021 and 2022 events.

Figure 5: Overall participation in, and impact of, the ABDN Grad Challenge in 2021 and 2022

Feedback from participants

Reasons for students taking part in the ABDN Grad Challenge were varied with some taking part because they felt it would bolster their knowledge and skills for their degree programme and others taking part to enhance their opportunities to work with external organisations on real-world problems distinct to their degree programme.

> "[As] a student of the MSc in Energy Transition System and Technologies…I wanted to participate in the grad challenge to get an opportunity to work on a team working towards sustainability."

> "For the first-hand experience to knowing what these companies do as part of their daily activities or to keep their companies running."

> "I wanted to take part in the ABDN Grad Challenge to learn new knowledge and develop my team management skill while tackling real-life challenges."

> "To have a collaboration with live industry challenges and enhance my skills."

Students also highlighted the opportunity to work in interdisciplinary teams with people from other disciplines as a positive outcome from the ABDN Grad Challenge. This view came from a combination of their self-reflection on the Belbin GetSet assessments and the chance to work with others from outside their own discipline of study.

> "I thought Belbin gives people a chance to see their real characteristics while working in a team."

> "I can see what my strengths and weaknesses are. I will continue to work on my weaknesses to make these as my strengths."

> "Our team…was [a] wonderful blend of people from different streams of studies and provided timely help in the completion of the challenge."

> "[My team was] creative. Easy to work with. Industrious."

Commenting on the challenges set by the partner organisation, many students felt they were appropriate, if sometimes demanding, but overall, they had a positive view of the challenges they had been assigned. Several participants highlighted the opportunity for them to be creative and innovative in finding solutions to their specific challenge.

> "The challenge brief was quite easy to understand. The tasks assigned to our team were interesting in the sense that we had to exercise our creativity to generate initiatives."

> "The challenge was quite tasking but I enjoyed it."

> "[The challenge] was very demanding in a positive way."

When asked what the students enjoyed most about taking part in the ABDN Grad Challenge, many highlighted teamworking, ideation and successfully finding solutions the problems set in their specific challenges.

> "Ability to think outside the box and provide solution(s) within the shortest time."
>
> "I got an opportunity to lead a team of diverse professionals in sustainability and managing the project along with the other activities I was involved in was a learning experience."
>
> "I enjoyed hearing about other people's ideas when tackling the tasks. It was great to be proud of the work we produced collectively."

Overall, 100% of students who participated stated that they would recommend taking part in the ABDN Grad Challenge to other students, ultimately vindicating our approach to the programme.

Overall impact

The focus and aim of the ABDN Grad Challenge was to develop a programme that does not aim to teach students enterprising skills and behaviours directly but allows them to discover how they can be enterprising when faced with a challenge.

Overall, the planning of this exercise, using the frameworks mentioned in this report, have proven successful in achieving this aim as feedback from those taking part has been positive. Regardless of the challenge set, the team they were in or the outputs they created, students fed back that they had developed new skills and enterprising behaviours from taking part in this initiative. Linking back to the planning of the ABDN Grad Challenge, we have been able to demonstrate that students can be 'motivated and inspired', 'build collaborative relationships', show 'creativity and innovation', and enhance their 'interpersonal skills' (themes from the Advance HE Embedding Employability and Enterprise and Entrepreneurship frameworks), plus they can develop innovation skills such as 'sense making' and 'initiative' (from the SDS Meta-skills Progression Framework).

We are keen to track the initial impact of completing the initiative, and ask students to share their next steps as a graduate through joining our alumni network. A limitation in the ability to assess the longer-term impact of completing the programme is the necessity to adhere to General Data Protection Regulation (GDPR) guidelines. GDPR makes it more difficult to reach out to students directly but we have plans to create a programme alumni network using LinkedIn which should make it easier to monitor the impact of the programme in the future.

Future developments

The ABDN Grad Challenge is one part of an ever-growing range of co-curricular activities that are offered to students within an overarching programme called Pathway to Success. This is a new programme, started in academic year 2022-23, that allows students to develop their skills across areas of co-curricular activity they consider important for them. It therefore does not exist as a dictated programme of events and activities that students must align themselves to and in doing so gives them much more agency in their personal development journey.

Pathway to Success replaces previous co-curricular activities that allowed students to focus on leadership skills, attending employability-enhancing events and taking part in agreed activities. The new programme incorporates the key aspects of these previous activities but adds flexibility for students to follow their own pathway through attending employer events, skills development workshops and completing online activities and courses.

This most recent iteration of the programme has been updated in line with feedback from students and employer partners, both of whom suggested that having an in-person element would enhance the overall programme experience, allow students and employers more opportunity to network and further develop key skills (see selected freetext feedback below).

> "I liked that it was online but I believe having it in-person will increase team bond and make the work for the team faster."

> "I believe it would be better if a blended approach is implemented because if it is only online delivery, there is a greater possibility that participants are not engaged enough even though they are online."

> "Some individuals may not be able to travel to Aberdeen for certain reasons. If the challenge is long-running then maybe it would be better if it was delivered in-person."

> "I liked that it was online but I believe having it in-person will increase team bond and make the work for the team faster."

This year, the programme will operate on a hybrid basis, with some teams working online and others working in person from our Aberdeen and Qatar campuses. There will be an in-person launch event which will be broadcast to the online participants. Feedback also suggested that extending the duration of the programme will give more students the opportunity to participate and so we have elected to run the programme over two weeks, with some flexibility around 'core' hours.

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The EUACCEL project at Edinburgh Napier University: building effective cross-discipline teams to explore low carbon enterprise ideas

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Jacqueline Brodie, Associate Professor Entrepreneurship and Innovation, Edinburgh Napier Business School, Edinburgh Napier University.

Nick Fannin, Head of Enterprise, Bright Red Triangle, Edinburgh Napier University

Background

This case study discusses Edinburgh Napier University's (ENU) involvement in the EUAcceL-funded project (see the pilot project fact sheet for further information). To fully understand the drivers for taking part in this innovative and transformative student experience project, it is important to briefly summarise ENU's strategy that underpins learning and teaching and research. ENU's driving distinctiveness strategy seeks to "…deliver high-quality education…. to add value to the social, cultural and economic capital of our communities and shape their development" (Napier, 2022). This is being achieved through four strategic objectives, including:

+ building careers by creating opportunities for "personal growth in flexible innovative learning environment"
+ growing networks locally, nationally and internationally by providing an "educational portfolio that both shapes and responds to the needs of business and society"
+ advancing knowledge by "addressing live challenges…driving key societal, economic and environmental impacts".

In alignment with this strategy, the Business School at Edinburgh Napier has sought to provide a range of enterprise and entrepreneurship opportunities for students reflecting its own stated vision to be "the Business School for empowerment, enterprise and employability for all". Most recently, the development of our core curricular Employability Skills Programme (ESP) in 2020, now undertaken at all levels of undergraduate study in the school, has given students the opportunity to undertake a structured set of activities that support the development of an evidence base of individual key skills in communication, collaboration and creative problem solving (Saddler et al, 2021). However, the Business School and the university have continued to seek out additional distinct opportunities for 'authentic' enterprise and entrepreneurship learning experiences that would add value to our student learner journey (QAA, 2018). By 2021, a gap in our extra-curriculum opportunities had been identified as the need to provide further experiences for students to work in multidisciplinary teams across schools (since ESP is a programme-based experience) (Rattan & Jones, 2021); to systematically explore business ideas from inception to implementation and be given the opportunity to take action around key areas of societal concern (such as climate change).

The Business School, led by Chris Cramphorn, working with the university's Bright Red Triangle (business start-up support unit) led by Nick Fannin, decided to explore a potential opportunity to address these gaps through a unique funded learning opportunity called EUAcceL, a cross-Europe virtual incubator partnered with various universities. This opportunity would allow our students to engage in enterprise activities with others inside and outside ENU on a real-life business development project focused on low carbon enterprise ideas.

This new project fitted well with the expertise of Chris Cramphorn, Associate Professor for Entrepreneurship at ENU's Business School, who had already been engaged in smaller-scale projects to explore circular and low carbon approaches to key climate change issues. It also fits well with Scotland's 2022 10-year strategy for economic transformation. One of its five programmes of action is entrepreneurial people and culture – helping to support the government's ambitions for Scotland to be fairer, wealthier and greener (Scottish Government, 2022). The ENU component of the project drew on existing theoretical and practical models of entrepreneurship especially Reis's (2011) Lean Entrepreneurship but also the Enterprise Educators' Enterprise And Entrepreneurship Education Toolkit.

EUAcceL is a new initiative set up by several European higher education institutions (HEIs), their incubators, a research and development centre, start-ups and established industry partners. It aims to accelerate innovation further in Europe through open innovation, co-creation and start-up development. It seeks to foster innovation and start-up development with speed and quality, implement synergies with other innovation network initiatives, and create a leading European programme for entrepreneurship and innovation. The project received funding from the European Institute of Innovation and Technology (EIT) HEI Initiative: Innovation Capacity Building for Higher Education. This new initiative has set out to identify ways to boost the entrepreneurial and innovation capacity of higher education institutions (HEIs) in Europe. As part of the EUAcceL project, ENU works with the following European partners to create "networks of ecosystems" that can support start-ups:

+ Hochschule München University of Applied Sciences – Germany
+ FH Campus Wien – Germany
+ GründES! Esslingen University – Austria
+ The Edge – Bulgaria
+ Ghent University – Belgium
+ Research Centre of Athens University of Economics and Business – Greece
+ University of Pisa – Italy.

EUAcceL's overall objectives are to:

+ integrate and assess impact in entrepreneurship education, start-up development and co-creation
+ internationalise and collaborate within entrepreneurship education and entrepreneurial structures
+ implement an open entrepreneurship and co-creation framework to help HEIs and ecosystem actors to iterate innovation activities

+ digitalise the open entrepreneurship and co-creation framework
+ scale the EUAcceL initiative with new HEIs, innovation ecosystem actors and content
+ develop new business models to ensure funding opportunities for international start ups.

The EUAcceL's two key focus areas for the pilot project are presented in the table below:

Table 1: EUAcceL topics

EUAcceL urban mobility	EIT manufacturing
Active mobility – mobility through non-motorised means, based around human physical activity eg bikes	**Flexible production systems for competitive manufacturing** (emerging technologies enable almost limitless flexibility in product design and production, allowing full customer customisation)
Intermodality – make using more than one mode of transport during a single journey as easy as possible	**Low environmental footprint systems and circular economy for green manufacturing** (using new technology to minimise use of resources, energy, and material in production systems enables new circular business models)
Mobility infrastructure – physical and smart connections to improve travel flows (eg smart roads etc)	**Digital and collaborative solutions for innovative manufacturing ecosystems** (collaboration and business on digital platforms and value networks enables companies to create new and highly efficient value chains)
Mobility for all – travel for all users including disabled, elderly etc	**Human-machine co-working for socially sustainable manufacturing** (smart use of automation and robots enables great workplaces, flexible production, and sustainable human work)
Pollution reduction – reducing emissions, toxins in manufacture etc	
Sustainable city logistics – making movement of goods as sustainable as possible within cities (eg bike couriers)	
Creating public realm – possible spaces for populace	
Future mobility – likely future requirements and mediums for mobility	
Mobility and energy – improve energy in mobility eg battery, solar, hydrogen.	
Engineering design for mobility – designing new engineering solutions for mobility	
Sustainable materials – integrating sustainable materials within mobility options, including circular economy.	
Automation and IoT – automation and data gathering through new technologies	
Modelling and simulation for transportation – improving the movement of people and goods from a transportation hub to a final destination **Product design and manufacturing**	

The overall funding granted awarded to the EUAcceL initiative from EIT was 1.2 million euros, to be shared across the partners in two stages. The next section of this case will share insights from ENU for the first iteration of the project and the initial stage that took place from October 2021 to December 2021.

Initiative approach

After receiving funding for EUAcceL, the project partners organised to undertake the following key activities:

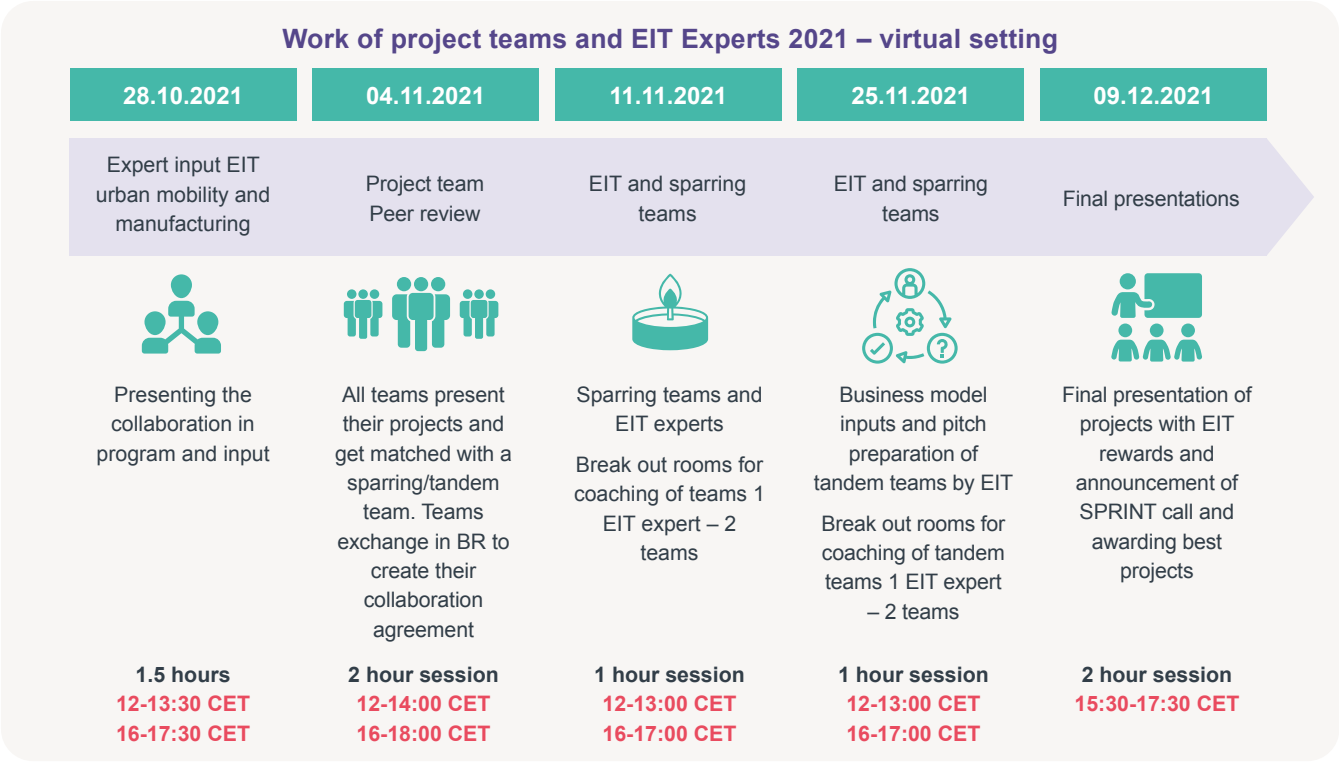
+ identify suitable student teams from each HE institution
+ provide input sessions of EIT experts
+ all teams taking part in the project were matched with a tandem team to offer peer challenge
+ team coaching
+ business model and pitch preparation
+ support for final student pitches.

These activities are captured in the timeline shown in Figure 1. While students were self-selecting at ENU, much care was taken to identify the students across the university who would like to take part in the challenge, ensure their suitability with relevant information meetings and pair them with other students to help create the synergies needed for an effective cross-school team. For example, business school students were placed with relevant science students to maximise the skill-sets available for the projects.

Across the seven partner organisations, 12 experts in the field were identified to support the teams. The student teams themselves would then embark on 7.5 hours of team-based experiences to develop a new offering in the area of low carbon. At Edinburgh Napier University we were also happy to mix undergraduate and postgraduate students in teams. Each of the teams developed were of a maximum of three students placed with an expert in their area of interest to help them identify relevant opportunities in their chosen area of interest. In addition, a clear mentoring process was put in place to ensure that the teams were viable and had insight into their own dynamics. To ensure relevancy and build knowhow, mentors were an academic and a member of the university's business incubation team who were already working in the project and had considerable knowledge and experience related to entrepreneurship and low carbon development. After the initial forming stage, students were supported to identify good quality information to inform their emerging business model and help the idea be potentially ready for market.

At the end of the process the goal of their learning experience was to be investor ready and pitch the idea (receiving a certificate to mark their teams achievement). At the end of the pitch stage there is the option to take the idea and start to develop it further, moving potentially into stage two of EUAcceL (which involves a funded accelerator stage).

Figure 1: The work of project teams in the EUACCEL pilot



The project has operated through three cohorts for the learning process with more than 200 students on each cohort, and 30+ start-ups undertaking incubation. The project has also collaborated with another EIT funded project (TANDEM+) to develop the Start for Future Community with a knowledge sharing platform that also connects to industry, and there are 28 partner universities around the world. Start for Future also won the Triple Helix Collaboration of the Year at the Triple E Awards 2022.

However, there were potential challenges that arose and the Napier project team had to keep aware of and resolve as they occurred. For example, it was a challenge to recruit enough students to an extra-curriculum activity that would take them away from their everyday studies. In addition, there was an obvious risk of individual students dropping out near their exam time (which would be close to the EIT and sparing team event) potentially jeopardising the team's viability. The Napier team were also aware of the limitations on the support mentors and advisors time if students asked too much of the support being offered. A critical issue was that because the activities were all being carried out online there could potentially be communication problems across countries. The right technology being used for communication was therefore important. There was also a tight time scale to implement the tasks involved in the EUAcceL as can be seen in Figure 1. Continuity after project funding runs out was also an issue that the team reflected on. However, the team were aware that Bright Red Triangle had its own incubator space that students could use to continue on with their projects if they so wished – even if they did not receive funding from the second stage of EUAcceL. The ENU team also had to make sure they tracked the milestones as students reached each key stage in the project to report back to the funders and for their own understanding of the progress of the project.

Outcomes of EUACCEL Project

The EUAcceL has stated clear outcomes it would like to achieve by 2023. With indicators of progress, these are:

+ reach 15 universities in Europe (actually achieved 20+)
+ educate 900 students (on course for achievement by June 2023)
+ support and train 120 professors and incubator consultants (achieved)
+ develop 60 new start-ups, onboard 20 companies, and bring over 2,500 innovation ecosystem actors to the initiative (on course for achievement by June 2023)
+ by 2030, EUAcceL will become the leading holistic programme that unites entrepreneurial universities, research and development centres, industry partners, and a new generation of start-ups, and will change the innovation landscape in Europe and beyond.

Students have also appreciated the programme, with one non-business school student noting:

> "It has been so helpful. They taught us a lot of things [about start-up] I had no idea about."

One of our female entrepreneurship students also noted:

> "My experience has been amazing so far. I've been really fortunate I was able to go to the SCE for incoming week in Germany [which is] an opportunity for global start-up businesses to all come together."

Reflecting on their skills development during the learning experience one participant stated:

> "You don't have to be a Silicon Valley wonderkid. When I first started I couldn't even spell entrepreneur never mind be one."

Finally, one of our international start-up students enthused

> "I [woul]d 100% recommend anybody to join."

To support the achievement of these objectives, from an ENU perspective, we are keen to monitor:

+ number of attendees to the information sessions that were run for the project. We are also seeking to record how many of the students apply to take part
+ how many are chosen to take part alongside how many complete
+ the students' qualitative feedback from the experience
+ the feedback from the academics and mentors who support the project
+ track what happens to the businesses ideas developed after the initial stage 1 experience
+ the development of student business case studies that can be shared with our partners and also within ENU
+ identify what happens to students and their businesses after taking part in the project.

Conclusion

One of the “take home” messages of the project is that virtual collaboration is something that can allow the UK HEIs to remain connected to the rest of Europe and engaged in long-term partnerships. Another key learning from taking part in the study is that students can be effectively empowered during their studies to engage with opportunities to solve key social and environmental issues. Taking part in such activities can be deeply meaningful and potentially transformative for themselves and others around them. Working together with other stakeholders has meant that ENU could achieve so much more than the business school or the university could do on their own. Our initial goal to provide a transformative enterprise/entrepreneurship learning experience has been achieved through EUAcceL but further refinement will be necessary and a process of reflection and modification will take place.

For example, two areas that have been flagged for further exploration are to look at how engagement with the EUAcceL project fits with other enterprise/entrepreneurship education activity within the university. It may be, for example, that students are given the choice to undertake EUAcceL rather than the more standard employability offering and be given credit for a reflective wraparound for this activity. For other relatable enterprise/entrepreneurship activities in the university it is important to map these activities and link them to the emerging employability strategy of the university. Another key area that the ENU team will explore is the opportunity for learning to be recognised on transcripts for students. Currently, our Employability Skills Programme (ESP) is being recorded on the undergraduate students’ academic transcripts but where can EUAcceL learning be recognised for students? Should this be in their Higher Education Achievement Report (HEAR) or should the experience be developed into a learning experience that is able to replace ESP on their academic transcript?

It is evident that the way the EUAcceL project is delivered makes it transferable to the exploration of business ideas to support other issues facing society. For example, with the right mentorship and support, students could work on a topic that supported solutions for an aging population. Finally, our guidance to other academics engaged in a such a wide-reaching collaborative learning and teaching project is to ensure that evidence of the impact is carefully captured and shared across the partner institutions, the funders and beyond.

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Enterprise and Innovation Lab 2022

Tom Ledgard – Head of Placements and Graduate Outcomes
Frazer Stark – Project Manager (Placements)

Background

Wider picture

Last year, Superscript (2021) conducted a survey through the Office of National Statistics and declared Leicester to be the UK's most entrepreneurial city in the UK outside London. To capitalise on this, the university is progressing with plans to ensure that as wide a student population as possible is exposed to skills in enterprise and entrepreneurship.

This approach is a key feature of the university's vision for employability, which seeks to ensure all our students reach their full potential, regardless of background. The University of Leicester is fully invested in inclusivity and boasts a higher than sector average in the equality data of our student demographics.

Enterprise and entrepreneurship education can add value to the journey of all learners, whether they are interested in starting a business venture or being enterprising when working for someone else in the private, public or voluntary and community sectors. A growing evidence base highlights the value of developing enterprising and entrepreneurial skills in learners.

At the University of Leicester this is tackled through a three-pronged approach.

1. Enhanced business development initiatives and ranging support options through the universities Innovation Hub.
2. Embedding employability and transferable skills throughout the curriculum is strategic for the University of Leicester.
3. Building a portfolio of extra-curricular challenges that can be "picked off the shelf" each year and used, based on available resources and student demand.

This case study focuses on the third point and one of these "off the shelf" products the university has produced.

Extra-curricular products provide both a challenge and benefit for universities. As they do not have to fit curriculum planning windows, they can be flexible and innovative in their design up to the point of delivery. However, they face two main challenges: student engagement outside of the curriculum is often low without incentives and financial backing for projects like this are not consistent year-on-year.

Central challenge

We believe work-related learning is an important element in building a student's employability. With a view to increasing engagement and capturing students who were not taking part in a placement, internship or other work-related activity, but wished to do so, we hoped to engage with them using an exciting and innovative approach and a short work-related learning module.

With this as its premise, two main factors drove the Enterprise and Innovation Lab to fruition: Advance HE and Higher Education Innovation Funding.

Advance HE

As part of its advancement programme, Advance HE launched collaborative project called Adding Value through Enterprise and Entrepreneurship Education in High Education (Advance HE, 2020). This shared project works with other universities to develop a best practice model and identify lessons about incorporating the skills of enterprise and entrepreneurship into the higher education curriculum. The university signed up to this programme in 2021 with an expected delivery in 2022.

Higher Education Innovation Funding

UK Research and Innovation provides universities across the UK with Higher Education Innovation Funding to "support and develop a broad range of knowledge-based interactions between higher education providers and the wider world, which results in benefits to the economy and society." Additional funds were released in January to support the summer projects to enhance employability.

Framework for delivery

Two main frameworks were used to shape the project. The internal framework was used to comply with university curriculum planning, and the external framework was used to guide the product into sector best practice.

External. The Advance HE Framework for Enterprise and Entrepreneurship Education (Advance HE, 2019) layers 1-3 were delivered collaboratively between university staff, contractors and employers. The expected outcomes for the project are focused on the fourth layer (creativity and innovation etc).

Internal. The university has a set framework for work-based learning modules and this is discussed further in the approach section.

Approach

General approach

An extra-curricular work-based learning approach has been adopted by the University of Leicester for developing skills in entrepreneurship in students who are not traditionally exposed to these subjects in their degree programmes. While embedding these topics inside the curriculum would be a best-practice approach, the process for implementing this is often long and complex. To ensure what is eventually placed into curriculum is fit for purpose and enduring, the extra-curricular space can be used as a testing ground for new initiatives.

To support this, the university defines enterprising and entrepreneurship skills as part of our Transferable Skills Framework. We define these as:

+ seek to develop knowledge and understanding
+ take initiative, proactively take action and responsibility
+ identify opportunities, generate original ideas in response
+ implement ideas while managing and taking risks
+ demonstrate perseverance, determination and ambition
+ build and maintain effective relationships with stakeholders
+ generate and implement ideas through leadership and management
+ make decisions and take action supported by continued process of experimentation and evaluation
+ undeterred by setbacks, tolerant of uncertainty and risk
+ demonstrate commercial awareness
+ create or add value to projects
+ influence stakeholders and challenge business as usual to find more efficient and environmentally sustainable solutions.

When our School of Business is defining these skills as part of its curriculum module, it also draws from the definitions from the QAA Enterprise and Entrepreneurship Education: Guidance for Higher Education Providers, January 2018 (QAA, 2018).

Additionally, considering employability skills and allowing students to sell themselves to future employers, a separate intervention outside of the curriculum space is a cleaner sell for students drafting CVs, preparing for interviews, or developing sale pitches for business ideas.

The university's guidance for work-based learning has three pillars to which the project needed to adhere.

1. **Work environment.** Simulate workplace activity (on/off campus) for students to develop professional etiquette and behaviour through working with others.
2. **Skill development.** Develop and evidence technical/transferable skills in preparation for the workplace.
3. **Reflection and forward planning.** Apply degree knowledge and link work-related learning to reinforce development and forward planning.

2022 approach

The Enterprise and Innovation Lab was conceived from a combination of factors and previous projects. The premise of the project is that the Career Service delivers a paid opportunity to students who have not achieved any significant work experience going into their final year of study to broaden their understanding of enterprise, innovation and entrepreneurial skills.

The term entrepreneur was not incorporated into the project title to ensure that students were not dissuaded from applying as they may not feel they fit that perceived definition. There was a concern that the skills and nuances of entrepreneurship vs intrapreneurship would be lost on students who would just be browsing job titles. Additionally, the title of the job within the project was labelled as a "Sustainable Innovator". This was to capture students on a subject that the majority of students feel strongly about (88% of students agree that their place of study should actively incorporate and promote sustainable development [SOS, 2022]).

Key themes that students would gain experience in would be:

+ growth mindset and resilience
+ design thinking
+ pitching ideas
+ project management
+ influencing and negotiation
+ problem solving
+ sustainability of ideas
+ stakeholder engagement
+ continuous improvement.

Considering the audience this event was aimed at (students who were entering their final year with little/no work experience) these themes were chosen as they relate and transfer to the university's graduate outcome aspirations and are commonly identified as enterprising skills in that they enable a student to add value in different contexts.

Throughout the week, the students gain experience via a mixed delivery approach:

+ standard short lessons would be delivered so students understood common terminology and resources
+ facilitated sessions where students would be set a task with the facilitator controlling the variables. For example, students would have 30 mins to brainstorm a new product to meet a certain requirement with x number of restrictions. They would then have to pitch this idea to everyone else

+ employer talks were used to provide students with a wider employability picture on the key themes. Employers were sourced from public, private, charity and academic professions to convey the message that enterprising skills are used in all facets of employment
+ a competition was used in the week's culmination to allow the student to put into practice what they developed and pitch a relatable and usable product in a dragons' den style format.

Participants

Much like an enterprising work environment, the project strived for a variety of students, staff and employers to foster fresh perspectives and mindsets.

Students. A mix of physics, business, computing science, mathematics and engineering disciplines were enrolled on the project. These cohorts traditionally would not come together in any standard university setting; an underlying aim here was to expose students from other disciplines who perceive ideas and concepts differently. Throughout the week, the students were purposefully mixed up to ensure they didn't remain in their social and professional bubbles, with the aim of developing social capital. Various social psychology studies derived from Granovetter (1973) have shown that developing these weak ties is key for entrepreneurs to innovate (Reuf, 2002).

> **Subjective student feedback –** "I found the problem-solving session to be challenging yet fruitful. By working in a team of students from different academic backgrounds I witnessed different approaches to finding solutions I found myself immediately drawn to numerical feasibility while others took a different approach."

University staff. A cross-section of career staff was used throughout the week to facilitate student reflection. Additionally, subject matter experts on sustainability and innovation were incorporated to provide face validity to the students and ensure key topics were covered appropriately.

External provider. For the bulk of the delivery, an external provider (contractor) was used.

Employers. A range of local and national employers were used throughout the week to capture different experiences in entrepreneurship and display those enterprising skills that can be used in SMEs and larger companies. Employers and guest speakers with their topics included:

+ **Laudes Foundation –** Systems Change in Civil Society
+ **Tim Elliot –** Climate Reality Leader and the Lens of Sustainability
+ **Indutrade –** Innovation and Sustainability as a Graduate
+ **MP for Leicester East –** Innovation in Politics
+ **Nelsons Family Law Partner –** Entrepreneurship and Law
+ **Annabelle Woghiren –** Tiktok Entrepreneurship

+ **University of Leicester Social Impact Team –** Sustainability and Innovation at the UoL
+ **Director of Research, Enterprise and Innovation, Southbank University –** Creative Problem Solving: unleashing your creative superpower for good

Timeframe

This project took six months from concept to delivery.

Delivering this project outside of the curriculum during the summer break resulted in a couple of noticeable opportunities and challenges. The main opportunity was achieving our target audience: students who hadn't secured a placement, internship or summer job. However, this was a double-edged sword as recruitment and interest from students fluctuated depending on the outcome of recruitment process of more significant work experiences.

Outcomes

Main findings

Pre and post event surveys were conducted with the students. Forty students completed the pre-surveys and 35 students completed the post-surveys. These surveys covered overall confidence, confidence in certain subjects, interest in certain subjects and subjective feedback.

Confidence

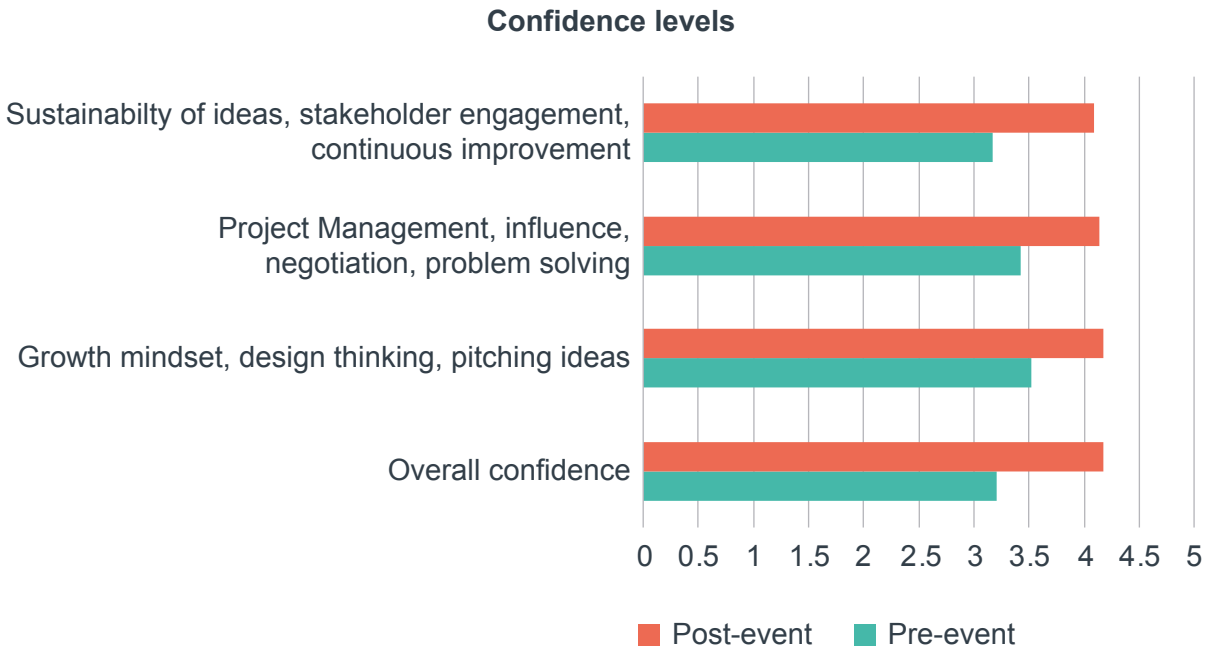
Assessing their overall confidence in the topics of enterprise and innovation, the intervention saw a 30% increase.

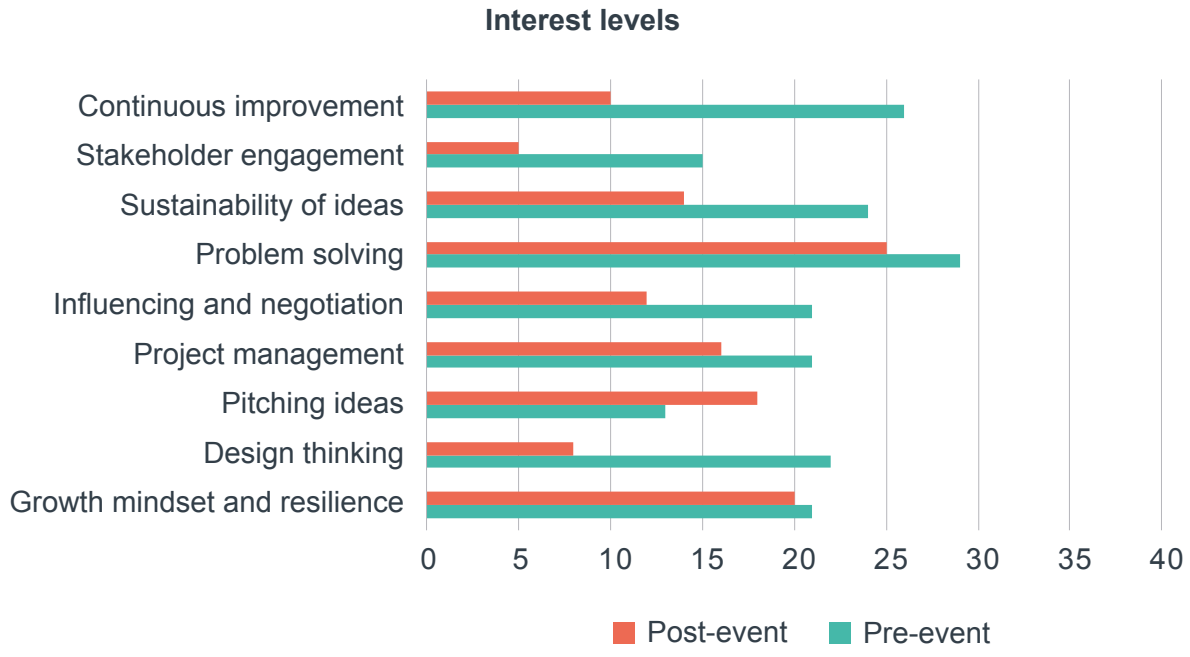
Assessing their confidence in the subjects of project management, influence, negotiation, and problem solving, the intervention saw an increase in 21% between pre and post survey results across all students.

> "I learned how to negotiate, influence and sell myself to recruiters through pitching. I also learned the importance of having a growth mindset, can-do attitude and coming up with ideas outside of the box."

Assessing their confidence in the subjects of sustainability of ideas, stakeholder engagement and continuous improvement, the intervention saw an increase in 29% between pre and post survey results across all students.

> "Stakeholder engagement is something I had never learnt about before and believe the ideas discussed can help me network moving forward. I found the elevator pitch task especially helpful as I always struggle to promote myself and set myself apart from the crowd."


Confidence levels
Sustainabilty of ideas, stakeholder engagement, continuous improvement
Project Management, influence, negotiation, problem solving
Growth mindset, design thinking, pitching ideas
Overall confidence
0 0.5 1 1.5 2 2.5 3 3.5 4 4.5 5
Post-event
Pre-event


Interest levels
Continuous improvement
Stakeholder engagement
Sustainability of ideas
Problem solving
Influencing and negotiation
Project management
Pitching ideas
Design thinking
Growth mindset and resilience
0 5 10 15 20 25 30 35 40
Post-event
Pre-event

The interest levels data is somewhat misleading due to the difference in pre and post responses. However, as a result of this event, students are now more focused on how they pitch themselves and their ideas, a key function for securing graduate roles after they leave university.

> "Key skills and frameworks to apply in my professional and academic life. It helped me highlight my strengths and weakness due to the vast array of topics. I also found asking deeper questions as a foundation of self-improvement in business to be important."

> "The main takeaway for me was learning about the world of enterprise and learning how influential a different mindset can be when tackling entrepreneurial endeavours. It will be really useful implementing these transferable skills in my future application."

Reflective feedback

As defined in the Pedagogy for Employability (The Pedagogy for Employability Group, 2014), the requirement for self-awareness and reflection is key for helping students form their personal development plans. Throughout the week, students were required to complete a reflective journal on the subjects they worked on. Additionally, this requirement for reflection is a core component of the university's approach to work-based learning. Some key extracts from these reflections are:

> "I initially thought that the pitching session would be most challenging for me as I dislike public speaking, however being in a group of people who were engaged with the tasks and confident in our ideas made the session very enjoyable. It was a challenge to match the style of pitching of our given person/company but in the end I believe this led to more entertaining and convincing pitches."

> "The reason I signed up for this placement was to improve my workplace related social skills and I feel that the first day has really helped me and I look forward to the rest."

> Stakeholder engagement is something I had never learnt about before and believe the ideas discussed can help me network moving forward. I found the elevator pitch task especially helpful as I always struggle to promote myself and set myself apart from the crowd."

> "I like that I have now had a chance to think of designing, selling and actually presenting solutions is very interesting and forward which i believe will be useful for my future self in employment and development sectors, I myself would like to work in the nuclear sector which will encompass some of these issues also."

Further developments – student focus

There are a number of inferences that can be derived from the data provided by the students:

+ the percentile increases in confidence levels are significant considering this intervention was only one-week long
+ student exposure to enterprising skills is limited in the curriculum, especially for those on technical degrees. Interventions such as this one helps these students broaden their career perspectives and develop soft skills
+ a hybrid delivery approach is effective at keeping students engaged. Subjective feedback from students from days that were more delivery focused than facilitated sessions received higher levels of negative feedback *("The whole day was less interactive than yesterday. I felt like to keep everyone's attention fully captured, there needs to be an aspect of competition between the groups and specific activities").*

Further developments – project focus

Throughout the project's lifecycle, a few lessons were identified to assist in future endeavours:

+ conducting these initiatives outside of the curriculum is an effective method of delivery. It allows for greater flexibility with timings, funding opportunities and capturing students that usually wouldn't broach these subjects
+ successful engagement in extra-curricular activities such as this one is dependent on tangible benefits to the student (pay, for example).

Next steps

Moving into the 2022-23 academic year, the University of Leicester will continue to develop these extra-curricular projects (Consultancy Challenges), drawing on lessons identified from past projects, the latest sector guidance and feedback from student demand.

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Identifying enterprise and employability opportunities in academic programmes via infographic timeline

Samia Kamal, Laura Novo De Azevedo, Lindsey Harrison, Gina Dalton, Clare Martin and Lucy Turner. Oxford Brookes University.

Background

> "Skills are not enough, work experience is not enough, attitude is not enough, qualifications are not enough. The answer lies in not just having all the above, but understanding what you want, why you want it and how you can go about achieving it...
>
> ...then make sure you do all the things you need to do to make it happen."
>
> *(The Future For Work, Bright Futures, 2013)*

Oxford Brookes University (OBU) has taken steps to enhance student employability and graduate skills. For example, offering within the curriculum distinctive disciplinary professional skills modules that focus on the development of enterprise, employability and graduate skills. Furthermore, providing students with the opportunity to gain practical experience through live projects, internships and other forms of experiential learning. In addition, a co-curricular badge scheme to help students make the most of their enterprise and employability activities at university and to enter the world of work by better understanding their skill set through self-reflection. OBU also recognises that enterprise and entrepreneurship (EE) education has a vital role in higher education and is addressing this through several initiatives.

Brookes Enterprise Support (BES), which sits within the Business Development Office at OBU, has been instrumental in creating an enterprising and entrepreneurial ecosystem in two ways. Firstly, through its co-curricular programmes for students who wish to develop their enterprising and entrepreneurial skills by providing them with an environment where these skills can be nurtured and preparing them for a broader context, whether industry or self-employment. Secondly, by working meaningfully with academics to a) empower them with a better appreciation of the attributes and competencies of EE education across their discipline and b) embed EE education within the curriculum to develop an entrepreneurial mindset and give students the practical and theoretical knowledge required to recognise opportunities afforded by ideas and act on those opportunities.

One such opportunity for BES has been the collaboration with the Faculty of Technology, Design and Environment (TDE) to co-create the Brookes Employability and Enterprise (BEE) transferable timeline to support OBU's ambitions outlined in its 2035 Vision (Education and Enterprise Pillar). The project is to support academics in:

+ identifying employability and enterprise opportunities within a programme of study
+ creating an infographic timeline to capture and visualise all the employability and enterprise opportunities on offer to a student during each year of their degree programme
+ understanding the EE education terminology as viewed by different disciplines.

Approach

The scope of this project is concentrating on the development and implementation of the BEE timeline, a graphic visual representation tool aimed at providing visibility of all the enterprise and employability opportunities available during a degree programme and to encourage students' engagement with such opportunities.

The perceived impact of this project is to:

+ develop a stronger impact on embedding enterprise and employability in the student experience
+ allow staff to easily see where there might be a gap either in terms of activities or skills development
+ create an expectation for the student to engage with these opportunities and self-reflect on skills required to succeed in the world of work
+ develop a one stop visual tool.

The idea of the BEE timeline was born from the realisation that students (and staff) are not always mindful of the enterprise and employability opportunities available and often unaware of the skills they have acquired through these activities. Hence, a need to highlight to students when such opportunities exist and for academic staff to be able to easily visualise what is on offer at programme level in relation to key enterprise and employability activities, ensuring that graduates are well-prepared for their transition into the workplace and have the necessary skills to succeed.

The BEE timeline visual graphics has been purposely developed as a set of Google Slides, making it easy for staff to use and personalise according to needs of their prospective programmes.

The BEE timeline provides a linear representation of all the years (from induction to graduation) of the degree programme. Reflecting the Enterprise and Entrepreneurship Education Framework (Advance HE, 2019), the activities are grouped into four categories with distinctive icons and colours:

+ building your professional profile activity
+ engaging with the profession's activity
+ developing professional communication skills activity
+ exploring ideas and enterprise activity

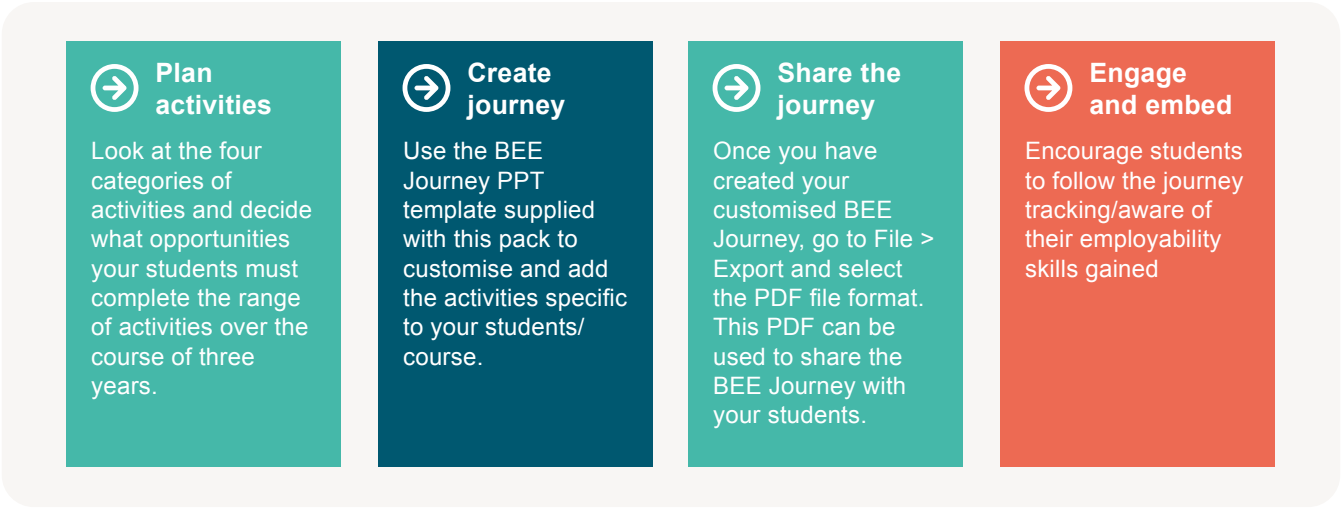
Figure 1. Brookes BEE Timeline logo. (Source: the authors)

Figure 2. Broad classification of activities, Brookes BEE Timeline 2021

The programme-specific activities are presented above the linear timeline, whereas the university wide activities are presented below the linear timeline. It must be noted that these activities are not compulsory but there is an expectation that the students will complete at least one or two in each category.

Furthermore, academics were given initial training via a workshop and an online tutorial was made available, ensuring they can use the BEE timeline in a meaningful way. Students were also provided with training on the use of the BEE timeline.

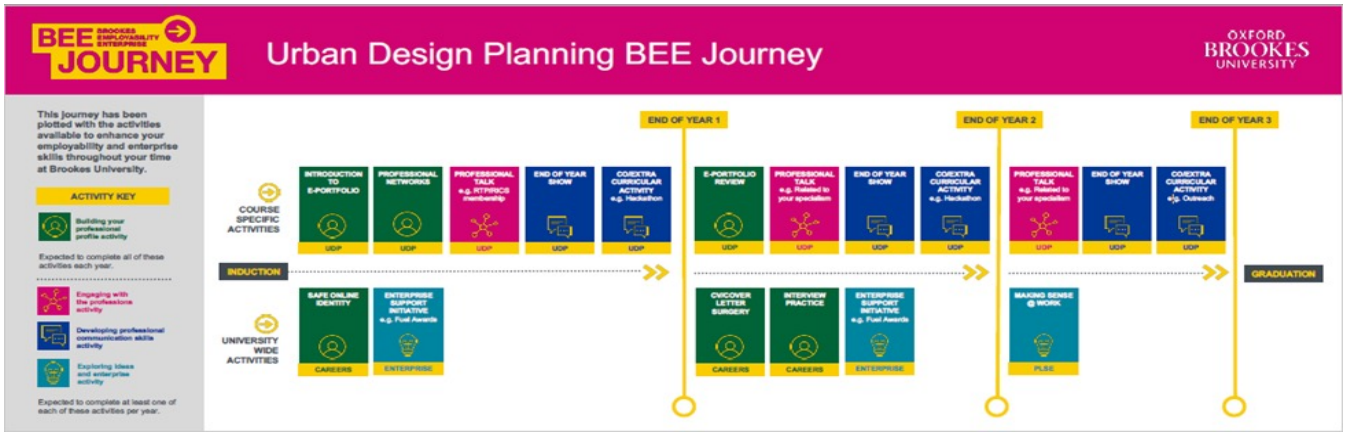
Figure 4. Process instructions for programmes. (Source: the authors)



The implementation of the BEE timeline also required some ongoing support and guidance to the academics, which was provided by the BEE development team.

A pilot project in the BA in Urban Design, Planning and Development (UDP) has been implemented to see what and where the enterprise and employability skills are embedded within the programme, with a view to gather information on how prepared the students are by the end of their degree programme for success in the workplace.

Figure 5. Brookes BEE Timeline for BA UDP edited in Google Slides. (Source: the authors)



Outcomes

The overall systematic research and impact study is designed to take place over the next three years. It will also evaluate and examine what worked well and less well in raising awareness and in use of the BEE tool by staff and students.

However, in the pilot study the first-year student cohorts on the UDP programme were presented with the BEE timeline during the induction week, whereas it was introduced to second and third year cohorts during cohort annual programme meetings. Staff were also reminded and encouraged during the programme development meetings to use the BEE timeline as a guide for academic advising sessions.

Initial student and staff feedback suggests a positive impact on student engagement with enterprise and employability opportunities. Students who were exposed to the BEE timeline indicated higher levels of engagement with enterprise and employability activities on offer. Moreover, staff have noticed improved self-reflection and confidence among students who made use of the BEE timeline.

Furthermore, the BEE timeline has increased the provision of enterprise and employability awareness and development opportunities at programme level. It has enabled academics (especially programme leads) to see how cohesive the enterprise and employability opportunities are across the programmes. This, in turn, has helped staff to identify any gaps or overlap in such activities. It is envisaged that this visual representation will also be used in validation, marketing and induction materials.

Conclusions

This is a work in progress. The strength of the BEE timeline design comes from its flexibility and adaptability within different programmes and the simple interface, which is intuitive and engaging.

The next step is to create an enhanced BEE timeline (based on initial student/staff feedback) and roll it out to other disciplines within the faculty before carrying out a systematic research and impact study. The BEE timeline has also been considered for our institution-wide approach (Education and Enterprise Pillar of Brookes 2035 vision) to embed enterprise and employability activities into the student experience, ensuring a well-prepared transition into the world of work.

In conclusion, implementing the BEE timeline in students' programmes is an exciting project. It has the potential to create a meaningful learning environment for students to develop and explore their interests, skills and passions in a unique and interactive way as well as increasing student and staff engagement in creating a dynamic and productive learning environment.

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Digital Skills Accelerator – an enterprising project to develop successful graduates in the post-pandemic era

Digital labour market

The rapid digitalisation of workplaces and the move towards a digital and hybrid era have accelerated the need for students and graduates to develop and enhance digital skills. Recent research from the Chartered Management Institute (CMI), including data insights from higher educational institutes (HEIs), examines the employability of recent graduates from an employer perspective. It warns that graduate skills gaps will become more apparent in a hybrid/digital world and of the "need to embrace and embed the most relevant employability skills as we move into a fully digital and hybrid era" (CMI, 2021a and 2021b). The report cites digital communication, creating a digital brand/profile, and networking effectively in a digital world among the critical skills employers look for in work-ready graduates.

While many students embraced the pivot to online learning through the pandemic and developed many new digital skills, we recognised that students and graduates needed to embrace this digital transformation. Excellent digital skills are integral to being able to stand out online, start their own businesses and demonstrate skills during online interviews, as well as being able to work and collaborate effectively online. The latter is particularly important in first graduate roles, where online work often results in less interaction with managers, colleagues or mentors.

Digital skills – graduate attributes

The University of South Wales (USW) graduate attributes (University of South Wales, nd) inform curriculum design and influence the type of activity and resource committed to strands of work. They have also been the baseline for recent employability awards, and we endeavour to interweave and represent these attributes throughout the curriculum and extracurricular activity. The USW graduate attributes include digital literacy, which sits within digital fluency (one of the eight foundations of the USW curriculum design principles, clearly articulated within the USW Curriculum 2030 strategy).

In developing the USW graduate attributes, USW Careers was cognisant of the need to include digital skills "in order to build students' digital capability alongside a range of other key employability and entrepreneurial skills to ensure our graduates thrive in a digital world" (Digital Marketing Institute, 2021).

> "Workplaces have changed. It is estimated that, in 20 years' time, 90% of all jobs (Department for Digital, Culture, Media and Sport, 2017) will require people to work with digital technologies. Already, '72% of large firms struggle' to recruit workers with digital skills."
>
> *(Jisc, nd)*

It was felt that students and graduates need practical elements of digital skills while working for SMEs, in graduate level employment and during their studies. Presenting data and work, writing compelling text and having consideration of brand were all seen as critical strands of future activity when working with both students and graduates. Strong digital and IT skills can also support the identification of enterprising and entrepreneurial opportunities, for the organisation graduates work for as an employee or to start and develop their own business.

As one of the 10 Institutions signed up to 'Adding value through Enterprise and Entrepreneurship in Higher Education' (Advance HE, 2020) USW looked to innovate and reconstitute its offer in line with contemporary thinking. A number of strands of thinking emerged during the consultancy that reflected good practice in USW and across the sector, meriting immediate consideration and influence on existing projects. The alignment and exploration of employability and enterprise skills in tandem, resonates strongly with the structures at USW and was referenced as an area of good practice during the summary collaboration day.

USW Enterprise sits within USW Careers and the symbiotic benefits have evolved over a number of years in terms of new delivery, content and positioning of activity that has proven to add value to graduate success in the labour market. Much of the joined-up work focuses on Dweck's Mindset Theory (2015) and the USW graduate attributes. The creative thinker with a growth mindset is seen as highly valued by graduate recruiters. Innovation and Enterprise also sits as one of the six graduate attributes at USW, the foundation for a successful graduate and integral to the curriculum design process and validation/revalidation of our current degree programmes.

A core strength of USW Enterprise Team, recognised during the consultancy, was the ability to secure staff, student and graduate engagement with extra-curricular enterprise activities and projects. Notwithstanding the desire to embed further within the curriculum, the sense of community and active engagement with USW Enterprise has led to USW Careers considering messaging, content and community when earmarking new activity. Looking to build on this noted strength, after the consultancy USW Enterprise was challenged to develop a new project across multi-disciplinary teams supporting the development of at least one strand of the graduate attributes. The graduate attribute of digital skills was chosen, and the project would explore and pilot a Digital Skills Accelerator.

Project conceptualisation

Digital skills and mindset have been shown to be essential to the new world of work, whether in employment or self-employed. Digital skills are also essential to online community building and personal branding. The USW Careers and Enterprise Team contextualised a bespoke Digital Skills Accelerator to provide tools for the future of work and business for students, graduates and staff. Bringing together the essentials of digital tools, writing for business/web, digital and social media and creative content and personal branding during live sessions, supported by on-demand sessions and wraparound courses.

Aims and objectives

A cluster of staff from the USW Careers Employability Development Team and USW Enterprise team determined the focus of the Digital Skills Accelerator to:

+ raise awareness of current tools and trends in digital skills across the labour market
+ upskill students, graduates and staff in practical application of digital skills
+ provide wraparound courses on digital literacy, remote working, creativity and innovation
+ offer participants options for external courses in digital that offer free certification (eg Google Digital Garage, Hubspot Academy)
+ introduce participants to key enterprise and entrepreneurship competencies
+ showcase participants employer opportunities and consideration via the Cardiff Capital Region Graduate Scheme (Venture Graduate).

Learning and teaching planning

Assuring that entrepreneurship competencies were an explicit part of the learning influenced the content and a delivery model that would incorporate 'Entrecomp' (Grigg, 2022) pedagogical approaches:

Creativity (developing creative and purposeful ideas) – putting it into action with planning and management – digital tools to be explored that would enable that and be included in the activities.

Ethical and sustainable thinking – assessing consequences of digital impact – words – images – content. How they can inspire, enthuse and get others on board with digital tools.

Learning through experience – by doing – practical workshops with exercises and wraparound activity and reflection.

Rewarding students' efforts as well as their outcomes – growth mindset as part of the enterprising mindset allowing for exploration, effort and trial when engaging with a new idea (Dweck, 2015).

Developing routines in which students regularly review their own progress – stimulates reflection, flexible thinking and learning from experience.

As a project focused on digital competence, the EU's Digital Competence Framework (DigComp, 2017) where digital competence involves the "confident, critical and responsible use of, and engagement with, digital technologies for learning, at work, and for participation in society. It is defined as a combination of knowledge, skills and attitudes" (European Education Area, 2018) was also considered.

The DigComp framework 2.1 (Carretero Gomez et al, 2017) identifies the key components of digital competence in five areas as summarised below.

1. **Information and data literacy:** to articulate information needs, to locate and retrieve digital data, information and content. To judge the relevance of the source and its content. To store, manage, and organise digital data, information and content.
2. **Communication and collaboration:** to interact, communicate and collaborate through digital technologies while being aware of cultural and generational diversity. To participate in society through public and private digital services and participatory citizenship. To manage one's digital presence, identity and reputation.
3. **Digital content creation:** to create and edit digital content. To improve and integrate information and content into an existing body of knowledge while understanding how copyright and licences are to be applied. To know how to give understandable instructions for a computer system.
4. **Safety:** to protect devices, content, personal data and privacy in digital environments. To protect physical and psychological health, and to be aware of digital technologies for social well-being and social inclusion. To be aware of the environmental impact of digital technologies and their use.
5. **Problem solving:** to identify needs and problems, and to resolve conceptual problems and problem situations in digital environments. To use digital tools to innovate processes and products. To keep up to date with the digital evolution.

As a pilot within short timescales, expertise and budget, DigComp areas 2, 3 and 4 (above) were actively considered and addressed within the resulting Digital Accelerator.

Delivery model

The delivery model included four key areas as decided by the delivery team:

1. Synchronous and asynchronous delivery

The Digital Accelerator was built by creating a learning pathway that included both synchronous and asynchronous resources in line with the university's Digitally Enabled Active Learning Framework. The five live online sessions provided structured learning and guidance and ensured students had the opportunity to meet and interact with industry subject experts who could provide scaffolded learning (Bruner, 1976), as well as build and practice online collaborative skills with fellow students during sessions and practice online networking skills.

The live sessions were supported by a range of asynchronous resources that provided flexible inclusive learning opportunities building on key live session themes. We also decided to make the asynchronous learning optional in that students had to complete a requisite number of activities, but the choice of activities was left to the students so that they could decide which activities to engage with, based on their individual needs and varying career aspirations in recognition of the broad spectrum of courses and specialisms. While a deadline for award completion was set, it was important the pathway was inclusive and accessible so that USW students could complete the learning in their own time and at their own pace around their studies, work, caring and family commitments and the resources remain available so that they can be revisited and reviewed at a later date.

2. Connectivity and networking

The ability to make connections is an essential element of being entrepreneurial (Barabasi, 2014). Connectivism is a recent theory which suggests that, in an age of technologies, we increasingly learn by forming connections (nodes) within digital networks. These nodes can be people or resources such as social media. Connectivism is behind such developments as open online courses and the importance of entrepreneurial networks.

Connectivity was key across the whole delivery plan design in terms of:

People – customers, employees and other stakeholders

Connecting with people formed an integral part of the programme, with the sharing of practical tools, techniques and skills weaved throughout the entire programme (Sole and Roberts, 2015). Session topics included how to find and reach people, which social media and web platforms to use, content and copywriting and using Canva to enhance engagement. A specific session focusing on developing online portfolios and branding was built in "to help people to find and know about you".

Places – at local, regional, national and global levels

The tools, knowledge and online networking allowed students to connect and work collaboratively online through the Digital Accelerator. A small number of participants joined the Accelerator from outside the UK. The content was relevant globally but we were mindful to add in regional context with Venture Graduate delivering a session considering local graduate opportunities and maximising graduate employability, sharing online tools and strategies, as well as framing the future of work, hybrid working and working remotely.

Cultures – customs, traditions, laws, dress, religious beliefs

With the USW student and graduate population covering a growing mix of local, national and international students encapsulating a variety of cultures, we ensured a representative range of speakers and sessions that were interactive, thoughtful and inclusive.

Times – past, present, and future

In the fourth industrial revolution, a key component is the connectivity of devices anywhere in the world. The programme was delivered with a view to address emerging challenges (particularly based on the experienced of recent graduates) of hybrid working, Covid, the online world of work, through equipping students/graduates for the future with practical digital skills.

Ideas – old and new, big, and small

The Digital Accelerator was supported by a range of encouraged ideas, questions and reflection – speakers were asked to give their top tips and ideas and students were encouraged to think big and put their ideas into practice. Online tools which facilitate collaboration were discussed during the Working World Online session, covering the new opportunities allowing people to work collaboratively to: solve complex problems, learn new things, improve communication, generate innovation and boost efficiency and productivity.

Resources – materials, cost, sustainability

The Accelerator was built with the aim of developing practical skills and so downloadable and re-watchable resources and web tools that were easily accessible. The entire programme and accompanying USW Careers support was available to students, graduates and staff by signing up to the event through CareersConnect and without any cost implication to participants. The basic packages could be used immediately and in the future. Programme remained live to the participants for one year post programme.

Services – technologies, transport, communication

Communication was key to ensure the success of the Accelerator – we ensured the communication from promotion, delivery and follow-up was fresh and exciting to keep participants engaged and actively engaging with content and networking with each other. The Accelerator allowed participants to practice communicating and networking online with students, graduates and industry guests, enhancing their own professional profiles and professional writing to communicate/influence. Participants were encouraged to connect with guests across their social media platforms.

3. Use of industry experts

The Digital Accelerator used external experts to complement the expertise of the USW Careers and USW Enterprise Teams. A number of self-employed/entrepreneurs were used to deliver the content and subtly promote entrepreneurship as a career option. The USW host regularly referred to the skills developed as applicable to both employment and self-employment. Two of the live workshop presenters were:

Lucy Hall, founder of Digital Women, Social Day and Avviso Media Ltd, was selected having previously delivered on the USW Developing Entrepreneurial Women Programme with an engaging online delivery style, knowledge of latest social media trends and free content planning resources. Social media is a digital skill proven to boost attractiveness to employers and is key to starting a business.

Maggie Richards is a writer and former national press journalist who empowers others to communicate with clarity, kindness and confidence. She teaches sell-out copywriting masterclasses for City University, London, and is part of the tutor team on the Economist's Business Writing and Storytelling course. Copywriting is a key digital skill to be able to communicate effectively online and Maggie stood out with her ideas to deliver in an engaging and interactive way and learn through doing.

4. Assessment and feedback

Formative assessment was used to enable students to identify their strengths and weaknesses and target areas that required further development. To do this we designed both asynchronous and synchronous resources to complement the course.

We built an online pathway within our Careers Connect System, enabling us to create a learning pathway with clear learning outcomes and objectives in an organised, logical and progressive order.

To ensure the learners' needs were met in a holistic way, social pedagogy (ThemPra Social Pedagogy, 2022) was used to ensure a values-led approach to relationship-centred practice was at the heart of the pathway to support people's wellbeing, learning and social inclusion.

The pathway allowed for live monitoring of participant reflection and submission of work. Progress could be monitored, and during the weekly sessions we prompted the participants to return and reflect on prior learning, as well as share their views to the group via Teams Chat function. The participants were required to reflect after each session to ensure that they were adequately equipped with the knowledge and competence to move onto the next stage (Moon, 2009)

Participants were encouraged to reach out directly and frequently to programme organisers via email – asking for the best course of action and suggested wraparound content to engage in. The course organisers acted on this feedback, which led to the provision of bespoke guidance based on their requests and their desired outcomes for the accelerator.

Collective feedback was issued via email where common themes were identified (eg lack of detail or clarity in reflection, not considering the full elements of sessions or wraparound content).

Assessment was based on successful attendance of five live elements and completion of one on-demand workshop and one wraparound course. To promote co-design of the course, participants were asked to share three key learning outcomes for each of the sessions, to prompt reflection and reinforce learning. Learning outcomes were made clear for both the asynchronous and synchronous sessions to enable participants to identify key learning requirements by using clear and easy to understand language. By articulating these outcomes, it made it clear what the students would be able to achieve.

Outcomes

Throughout the programme, 427 learning activities were completed by 91 participants – 21 from the Faculty of Computing, Engineering and Science, 44 from the Faculty of Business and Creative Industries, 17 from the Faculty of Life Sciences and Education, and nine from professional services staff. To date, 64 people have completed the full programme and have been awarded the Digital Skills Accelerator Certificate.

> "It's hard to believe, but every one of the digital skills have come up in my USW internship; only today, I was tweaking a presentation in Canva, relieved to have such a good grounding in it. It's not just skills that were taught, but mindsets and work practices too. One session a week gave us time to absorb what we learned and discuss it with one another; we formed quite a tight little learning group along the way. I'd recommend this to anyone who wants a career in the creative industries."
>
> *Millie Sutherland O'Gara, graduate intern, 2022*

"As the course was open to staff and students, I seized the opportunity to enrol and across the series, attending five of the online seminars which developed my understanding of the digital world. I learnt how to effectively manage my online presence across social media platforms, how to develop a brand for myself and/or business, and understand the online job application and interview process, amongst other areas. The accelerator was supported by a variety of follow-on supplementary courses, which further developed my understanding of digital working. Engaging in the course was an enjoyable experience as it was very interactive and, as learners, we were given lots of opportunity to ask questions. The sessions were led by industry experts who provided contemporary insights to online working. I certainly recommend anyone with an interest in this area looking out for the next accelerator."

Andy Thomas, Senior Lecturer Sports Coaching and Development, FLSE

"All the sessions were very interesting and helpful for my future. From learning how to create websites on social media (such as Instagram), how to use Canva to making posters/ advertisements for your employer or own business, general tips on building a profile on LinkedIn and just learning about the careers team in general and finding out ways to benefit from using the service.
Even though I'm only a first year, I will be using all these tips straight away."

Rebecca Grist, BSC Computer Forensics student, Year 1

"Really enjoyed taking part in this programme and thank you for putting this together. I found the live webinars really useful, to help with understanding the online job application processes and how to prepare/excel for online interviews. I've gained insight into available software to help create more engaging visual content via social media (Canva). My favourite session was with Maggie Richards covering 'Copywriting for business', I found the information really useful for writing better job applications and generally. The on-demand workshop sessions via the Careers team and other speakers were also incredibly helpful with CVs/online interviews. The wraparound course element was a great idea so work through in my own time."

Rianne Davelaar, BA Media Production Graduate

Reflections and future thoughts

The success and engagement with the delivery model outlined above has given impetus to whether it can be replicated across a range of areas that can prepare students with different skills application for their own business ventures or across the modern workplace. A further pilot is being looked at around the theme of environment and sustainability, and exploration of a pathway for international students that reflects on cultural assimilation. These could form the foundation for future curriculum or extra curriculum enterprise and employability activities or awards.

In terms of the specific Digital Skills Accelerator, we are seeking feedback and connections with other digital practice or resources. The accelerator was linked to USW Digital Capability Resources developed for students by USW CELT and IT Services using, among many other resources, the Jisc Building Digital Capability resources. Internal feedback included the inclusion of more audio-visual content, and we would also seek to gain further employer, academic or entrepreneurial input prior to the next phase. We plan to revisit the DigComp 2.1 Framework, including DigComp 2.2: The Digital Competence Framework for Citizens (Vuorikari, Kluzer and Punie, 2022), updated guidance and build in further areas of digital competence that were not included within the initial pilot.

The programme achieved engagement across students who were looking to improve their skills for the workplace as well as those looking to set up or were in the early stages of starting a business, which demonstrated the joined-up approach and pick and mix style sessions worked well for the intended audience.

We will look to maintain links with completers of the programme to view their next steps in terms of business start-ups or graduate outcomes. Critical metrics in higher education are the Graduate Outcomes and HEBCI surveys and, before embarking on a future programme, we will investigate any correlation between attendees and their future success. It will prove helpful to keep these personal connections, not only to gain qualitative data in this regard but also to retain a key part of the community build ethos of the accelerator.

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ISBN: 978-1-9163593-9-0