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The barriers to embedding entrepreneurship education in Scottish universities

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ABSTRACT

Embedding 'entrepreneurship' into universities, whether in curricula or as standalone activities through the likes of accelerator programmes has become a key university strategy, enhanced by Tuffee and Little's 2023 paper, 'The Entrepreneurial Campus'. There is no doubt a transformative ideology, placing the entrepreneurial mindset and skills development of graduates from degree programmes at the heart of the recommendations is necessary. Coupled with this their paper suggests interdisciplinary teaching methods as one of the core solutions to this, with experiential teaching as key to unlocking social entrepreneurship, for example. There are many examples of experiential education methods, which develop entrepreneurial mindsets, such as 'Design Thinking' and Collaborative Online International Learning (COIL) but at times there is a gap between university and the 'real world' which is hard to bridge. With the present position of the university sector, not just within Scotland but the UK as a whole, the ability to 'make these things happen' is becoming harder and yet necessary for the Government to maintain and contribute to the economic growth and regeneration of the country. This opinion piece will consider the gap between these entrepreneurial development pedagogic methods and industry.

Keywords: Design Thinking, skills, pedagogy, entrepreneurship, interdisciplinarity

Introduction

Universities have a responsibility towards the skills development of graduates which makes them fit for the 'future world of work' (Hong, 2022). However, it is challenging for degree developers to consider the plethora of skill frameworks available to enhance their students' skillsets. For entrepreneurial mindsets, the development of the EntreComp framework based on a competency approach is considered as a blueprint (Joensuu-Salo, et al., 2022) for graduate skills development for entrepreneurs. The competency element bears great relevance in Scotland as EntreComp hangs on the national qualifications' frameworks of Europe (Cedefop, 2019). Notwithstanding this there are other skills frameworks, and while not entrepreneurial as such, they add to the 'curriculum development challenge' as there are overlapping competencies. These frameworks, although some are from a global perspective, impact on Scotland's education system and include Sustainable Development in Education (ESD) (UNESCO, 2024) GreenComp (European Commission, 2022) Meta Skills (Pratomo, et al., 2021; Skills Development Scotland, 2023) and Digital Skills (Rakowska & de Juana-Espinosa, 2021) to name but a few.

In introducing entrepreneurship as a key part of graduates development there has been a growth in the number of modules with the word entrepreneurship in the title; entrepreneurship departments within universities, often with highly successful accelerator and incubator programmes; and research centres which are entrepreneurial in nature as an 'invention' has occurred (Crammond, 2023a; Abreu & Grinevich

(2024). Scottish educational policy has also been in favour of the 'entrepreneurial campus' (Tuffee & Little, 2023) where the 10 year strategy aligns entrepreneurial skills and development of mindsets as crucial to the economic transformation of the country. Three of the ten key aspects for consideration are the transformation of curriculum, developing a talent pipeline, and enhancing extra curricula support (The Scottish Government, 2023). This hints quite strongly at the development of entrepreneurial mindsets, and to meet these goals enhancements considered by Scottish degree developers include experiential interdisciplinary methods of pedagogy, (Crammond, 2023a; Crammond, 2023b) such as Design Thinking (Hatt, et al., 2023) and COIL (Guth & Rubin, 2015). Gaps between these methods of teaching and the real world of work do exist, particularly when there is an accelerated pace of change with ESD and AI as examples of the need for speed. Barriers exist to the successful implementation of these practices and yet interdisciplinarity is key to the development of entrepreneurial mindsets. This opinion piece will consider the contribution interdisciplinary pedagogies can make to the development of entrepreneurial skills and mindset, whilst being cognisant of the barriers. It begins with teaching and learning aspects, and the development of the entrepreneurial mindset, before considering some barriers and concluding.

Teaching and Learning

To meet the needs of industry, educators in Higher Education Institutions (HEI) have consistently moved away from the traditional methods of teaching and learning such as rote approaches to embed more work-based learning (WBL), experiential interdisciplinary approaches (Tasler, et al. 2023). It could be stated that Post 92 universities have gravitated to these approaches more quickly than their counterparts due to their 'closeness to the workplace', often evidenced through the placement elements in degrees (Salinas-Navarro, et al., 2024). Although not contemporary, as these methods have been around for decades, Design Thinking (Bremner & Air, 2023) and COIL (Guth & Rubin, 2015) are two innovative interdisciplinary pedagogies which are used in the classroom to do just this. Coupled with the entrepreneurial mindset approaches these pedagogies consider some of the competence ideology from the EntreComp framework and could be classed as a vehicle for developing that mindset.

Although consensus on what Design Thinking is, is problematic, it is a five-stage process which follows a continuous 'wicked' problem-based approach (Bremner & Air, 2023). Moving through the stages of empathise, define, ideate, prototype and test, it places problems at the core of interdisciplinary student teams and through fast paced customer-centric solutions demands that teams produce answers. Exemplified at Robert Gordon University (RGU) the successful RGU Innovation Award does just this where student teams have been asked to consider sustainable issues for companies such as BrewDog or focus on social entrepreneurship, developing solutions for third space charities such as Cfine. This is only a snapshot though as the RGU Startup Accelerator programme has encapsulated the entrepreneurial spirit launching or assisting in over 130 business, with examples including Kindspace, Assetworx, Highland Moss, Maddie Online Martzoukou, et al., (2023) and Knit It to name but a few. Additionally, the RGU Entrepreneurship and Innovation Group launched an award winning 'Women in Business' enterprise skills programme, seeking to give working mothers a route to business development. All these activities are designed to alter the mindset of the participants placing innovation, curiosity and enterprise at the centre developing that 'can-do' mindset, using the Design Thinking pedagogy (RGU, 2025).

COIL is another pedagogical concept, which as well as being a problem-solving approach often underpinned by Design Thinking, adds in key work aspects, such as virtual and cultural competencies, which are a must

for developing the entrepreneurial mindset (Pirie, et al., 2025). So much of what we need to do as an entrepreneur of the future is to be able to work confidently in the interdisciplinary virtual global workplace, as everything we do is intertwined. Accelerated by the pandemic, the approach COIL uses is a perfect vehicle for these aspects (Crawford, 2024). Placing two or more university students to 'work' together on a project whether it is for an assessment or for competency development, it adds in a cultural skills development aspect for the students. Often culture is missed out in the classroom as it is 'hidden' to some extent, but when exposed to it in a virtual environment the issues are amplified (Marsee & Hoyos, 2025). RGU has a highly successful COIL programme under development in-house, with a suite of resources developed via a QAA enhancement theme bid (Crawford, 2023). More importantly, RGU has a theme lead with the COIL@Uartic programme, which is using sustainability issues as the entrepreneurial problem-solving aspects in the projects. An example has been presented by Harbert and Roitershtein (2024) focusing on how tourism can contribute to achieving sustainable development goal no 14 'life below water'.

To exemplify the success of these two techniques, Bremner and Air's (2023) research confirmed a change in student mindset using the Design Thinking approach in the RGU Innovation Award interdisciplinary workshops. Students indicated that their mindset had become more engaged, and certainly changed, in becoming more entrepreneurial. One respondent highlighted the need for universities to get 'behind this' method of teaching. Similarly, Bremner and Steed (2025) evidenced that using a COIL interdisciplinary approach had increased students' awareness of culture, sustainability and social entrepreneurship within their hybrid workshop scenario. The students' mindset had been changed via this method of teaching, making them more curious and open minded, thus demonstrating a link between teaching methods and the development of the entrepreneurial campus (Tuffee & Little, 2023).

Entrepreneurship - Mindset

As noted, the entrepreneurial mindset has been outlined in the Entrecomp framework, consisting of competencies in three distinct areas, namely: into action, resources, and ideas and opportunities (European Commission - EntreComp 2022). However, when we examine the layperson's definition of entrepreneurship, Britannica (2025) cites it as 'the state of being an entrepreneur, or a person who organises, manages and assumes the risk of a business with the goal of generating economic value'. Here we see business being mentioned and not surprisingly most people assume business is in there, but the definition is wider than that and with the change in society it has evolved to include growth mindset (creativity approaches) and consideration for social aspects, as society grapples with issues such as Climate Change. With this wider definition, the use of more interdisciplinary experiential teaching approaches is required to create that mindset.

Tuffee & Little's (2023) blueprint for the entrepreneurial campus highlights these wider aspects of entrepreneurship, stating that it is just not about business development but also about social inclusion, for example. They model the student entrepreneurship journey as being the 'MIT' way where there are stages in developing the entrepreneurial skills (Tuffee & Little, 2023). This includes inspiration, exploration, fundamentals, application and acceleration with the mantra of 'learning by doing'. This espouses the concepts of Bandura's (1977) Social Learning Theory and Kolb's (2014) experiential learning where the best learning takes place when one is observing, imitating and learning from mistakes and then improving. This

style of learning lends itself well to the creation of the entrepreneurial spirit and it is that which is more important than entrepreneurship itself. Hence it is not just the entrepreneurship modules, and entrepreneurial programmes which help develop skills, but the interdisciplinary experiential approaches, such as Design thinking and COIL, which when used in the classroom setting can embed the entrepreneurship ideologies in students' minds. These teaching approaches link directly to the Scottish Government's (2023) transformational education directive, suggesting education policy must include interdisciplinary teaching approaches in all tertiary education, and perhaps at secondary, to ensure Scotland's educational success with entrepreneurial skills development.

Barriers – The Gap

There are barriers though to successful implementation of these interdisciplinary techniques, when educators attempt to embed them into curricula to develop these skill sets in students to make them 'fit for the future'. It is worth noting the work of Smith (2016), who examined the cyclical nature of curriculum development and posited the co-curricular need for developing graduate attributes, and it is the use of these types of classroom approaches which can enhance this. Table one highlights some of the barriers through the lens of: course design, assessment, industry engagement, measuring enterprising development, and graduate skills development.

Concept / Barriers	Experiential Learning Design Thinking Pedagogy	Experiential Learning COIL	Graduate Skills Development
Course Design	It is hard to emulate the last two steps of the process being to 'prototype' and 'test' in the classroom Timetables need to be blocked well in advance to ensure mixed disciplines. Siloed structures don't easily allow for this	Timetabling Culture of country and student can be an issue Time differences Language differences IT infrastructure is not compatible.	If the interdisciplinary mindset approaches to course design, assessment and teaching are not embedded, graduates may not be ready for the world of work.
Assessment	Fair assessment for all is hard to achieve using these methods. Student satisfaction often decreases for assessment, module and course feedback when adopting these techniques as teamwork is often involved. This is despite students saying they enjoyed and learned more in these types of situations. Staff do not wish to take the risk in changing teaching style due to the above and how it may impact on themselves.		
Industry Engagement	Operationally industry partners and universities do not 'work' in the same way, making these techniques hard to embed.		There is a gap in skill development between the university and

		industry where pedagogic development and completing an industry problem-solving task does not emulate the work of work in its entirety.
	Industry partners often have their own agenda wanting something 'done for them' in exchange – this may not meet the needs of the degree quality control.	
Measuring Enterprising Development	With too many frameworks competing for presence in degrees such as ESD and Entrecomp there is no clarity on what enterprising skills are therefore it is hard to measure. More clarity is needed.	
Impact on the Development of the Entrepreneurial Campus	The barriers noted above impact on the overall success of the entrepreneurial campus blueprint; hence they need broken down and removed.	

Table 1 Barriers and impact of the use of interdisciplinary techniques

It is clear there are barriers to the implementation of these innovative classroom techniques, albeit only a snapshot of a wider issue. In noting these barriers and aligning with the blueprint recommendations (Tuffee and Little, 2023) institutions are trying to embed them. However, when taking into account the examples noted in theme four of the recommendations, i.e. the curriculum, these barriers noted in table one suggest theme ten is a priority. Theme ten centres on the need for combined frameworks, Key Performance Indicators and Collaborative Quality Control processes. At this point in tertiary education there has never been a better time to catalyse and capitalise on the tertiary sector's position in the economy, and more must be done to affect change. As we are teaching our students to be more interdisciplinary and collaborative, we need to do the same with stakeholders across the sector, to join up the dots.

Conclusions and recommendations

In conclusion, an HEI strategic priority exists in embedding entrepreneurial skills development within Scotland's curricula and this opinion piece has highlighted interdisciplinary pedagogic approaches which could assist with this objective. However, there are barriers to their successful implementation at the 'coal face'.

These barriers are bound in institutional operations, the approach itself, gaps between industry and education providers and the plethora of skills frameworks to be adopted to ensure graduates are 'employable'. This is against a backdrop of changing workplaces with a depleted job market and the acceleration of AI.

Measuring the success of pedagogic innovation for entrepreneurial development is not easy to do but research has identified that these techniques assist students in skills development. Therefore, as a small part of the campus ideology, the implementation issues for these approaches must be a focus for improvement. If the 'grass route' issues are not considered, the campus blueprint may stall.

Despite the number of stakeholders involved, more collaborative approaches are required between enterprise educators and policy members to ideate. One could recommend that future strategic direction

and planning should be considered through the lens of a Design Thinking approach. This is something the Scottish Institute for Enterprise excelled in during their time. In adopting a Design Thinking approach, the students and graduates themselves would be placed at the centre of the problem-based issue and ideation could occur around those issues. Start with the problem and ideate how it could be improved. A shake up is required which brings industry closer to the HEIs, where the traditional mould is changed to take advantage of a talent pipeline to place Scotland's economic future on the road map.

Biographies

Dr Pauline Bremner, Associate Professor, lectures in Retail and Fashion Management at Robert Gordon University. As part of her remit, she is Co-Lead for the REF 2029 team at RGU, leads institutional projects and research, and has presented and published on pedagogy topics at many conferences, including Advance HE, and QAA.

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