How do you create an entrepreneurial learning pipeline – starting from schooling?

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Executive summary

This article reflects on a personal journey, based on being a design educator who found many alignments between their past experiences and emerging entrepreneurial learning initiatives. In 2014 I was amongst a small team invited by the All Party Parliamentary Group (APPG) for Microbusiness to propose a pipeline for developing entrepreneurial competencies in all learners (Anderson et al., 2014). Our task was to set the scene for a continuous development of entrepreneurial education, starting from schooling. Ten years on, two initiatives have responded to our call. The Curriculum for Wales is well underway, and the World Bank funded Curriculum in North Macedonia is six years old. Both start the entrepreneurial learning journey at Primary level schooling, so perhaps it is no surprise that the APPG for Entrepreneurship (Conway / APPG, 2022) is asking Westminster Government to look outside their own box of experience, and to enhance English Schooling. Lessons learned include making a distinction between hindsight, insight and foresight learning strategies, aligning learning assessment to the Two I's of Innovation and Implementation, and understanding how progression models can be developed. At ministerial level, bringing together ministries of business and education has directly informed policy developments.

Statement of the policy or practice issue

As noted by Joan Lockyer in Issue 2, entrepreneurial learning should start early. Wales and many other countries have developed policies that drive entrepreneurial learning in schools, as called for by the European Commission and United Nations Conference on Trade and Development, where numerous reports indicate that success is related to learning to become more innovative, not simply learning business (e.g., United Nations General Assembly, 2020). English Government has yet to engage, so what can be learned?

Early developments

To set the scene to my contribution to this ISBE series, I am a design practitioner and educator who was trained to solve other people's problems using creative thinking approaches, I have had

a long-standing interest in how entrepreneurial education can be mapped to my own learning and teaching. Whilst Design Thinking Models have emerged to help non-designers, they have relatively little depth compared with disciplinary expertise (See; Penaluna and Penaluna, 2021), which I have been fortunate enough to draw upon in both practice and policy developments. Design is inherently interdisciplinary, and requires in depth learning of client needs, sometimes beyond their own immediate understanding.

For example, in 2013 the All-Party Parliamentary Group for Micro-Business, supported by the then Minister of State for Universities and Science David Willets MP, invited several academics to speak about their ideas for educational reform. I was fortunate enough to be one of the three who were selected to write the policy document 'An Education System fit for an Entrepreneur' (Anderson et al., 2014). Together with ISBE colleagues Nigel Culkin and Stuart Anderson, and later joined by Kelly Smith, over 14 months of research, we listened to educators across all levels and disciplines, private providers business owners and entrepreneurs. The evidence gained suggested that education had to start early, and that creative thinking had to lead the learning journey. Similar research in Iceland concurred (Jónsdóttir and Macdonald, 2013), moreover the insight aligned well with the UK Quality Assurance's definitional stances of being a creative enterprising individual before / alongside learning entrepreneurship and business (QAA, 2012, 2018).

In the South-East Europe Centre for Entrepreneurial Learning (SEECEL), more ambitious plans were afoot in 7 Balkans countries. In an EU funded project for accession countries, completed in 2016, each schooling, VET and University levels representatives developed their own set of progressive learning criteria. I was commissioned to lead the Entrepreneurial School developments and teacher training modalities, and a new journey into entrepreneurial schooling commenced. When EU funding ceased, one country looked for other funding that could enable them to progress the work further.
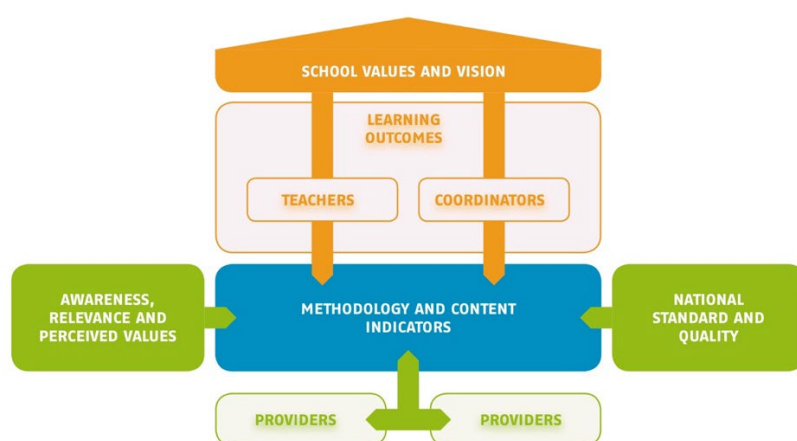
Diagrammatic representation of the IISCED Level 3 Entrepreneurial School, SEECEL, 2014.

In North Macedonia, and following key meetings with five ministries, a new curriculum in Innovation and Entrepreneurship followed. Funded by the World Bank, a progression model led the process, starting in Primary Education (Penaluna, Penaluna and Polenakovik, 2020).

The methodology matrix for entrepreneurship education in primary and secondary schools

Study year	IX grade primary school (13 – 14 years old)	I Secondary School (14 – 15 years old)	II Secondary School (15 – 16 years old)	III Secondary School (16 – 17 years old)	IV Secondary School (17 – 18 years old)
Title course	*Innovation*	*Innovation and Entrepreneurship*	*Innovation and Entrepreneurship*	*Innovation and Entrepreneurship*	*Business and Entrepreneurship*
	Being Entrepreneurial	**Entrepreneurial Community Experience**	**Entrepreneurial Business Experience**	**Entrepreneurial Management Experience**	**Entrepreneurial Leadership Experience**
Year aim	This year students will design an event that showcases the economic opportunities that they have discovered in Macedonia and beyond.	This year students will develop a social / community action project – to solve a problem discovered in the community	This year the student's will develop a business project that connects with global economic opportunities that they have discovered.	This year students will develop and apply their entrepreneurial management skills – to develop a business idea over the year.	This year students will apply all of their prior learning to develop a company
Innovation & Creativity theme	Who am I, and who is an entrepreneur?	Innovation & Creativity – the base of the entrepreneurial process	Innovation & Creativity – Ideas and business opportunities	Innovation & Creativity – managing the innovation and creativity process	Innovation & Creativity – making the entrepreneurial process work
Context theme	What's out there?	Context & Environment – Social Entrepreneurship	Context & Environment – Global business opportunities	Context & Environment – Founder's dilemmas	Context & Environment – Customer development
Business understanding theme	How do we create value?	Introducing business modeling	Business modeling & the Start Up process	Developing & testing the business model	Running & adapting the business model
Finance theme	How does money, buying and selling work?	Managing finance & resources in a social economy	Managing finance & resources in a market economy	Managing finance & resources in a business	Sourcing finance & organizing resources in a business
Communication theme	What I have learned and where could it take me?	Business Communication – Engagement and involvement	Business Communication – Marketing, sales & customer relationships	Business Communication – developments & promotion	Creating and implementing a business communication strategy

Online at: http://ee-hub.eu/component/attachments/?task=download&id=37:Matrix_Macedonia

In turn, the above developments directly informed the development of the EU Joint Research Centre's EntreComp Framework (Bacigalupo et al., 2016), especially in the areas of Visioning, Creativity and Coping with Uncertainty, Ambiguity and Risk.
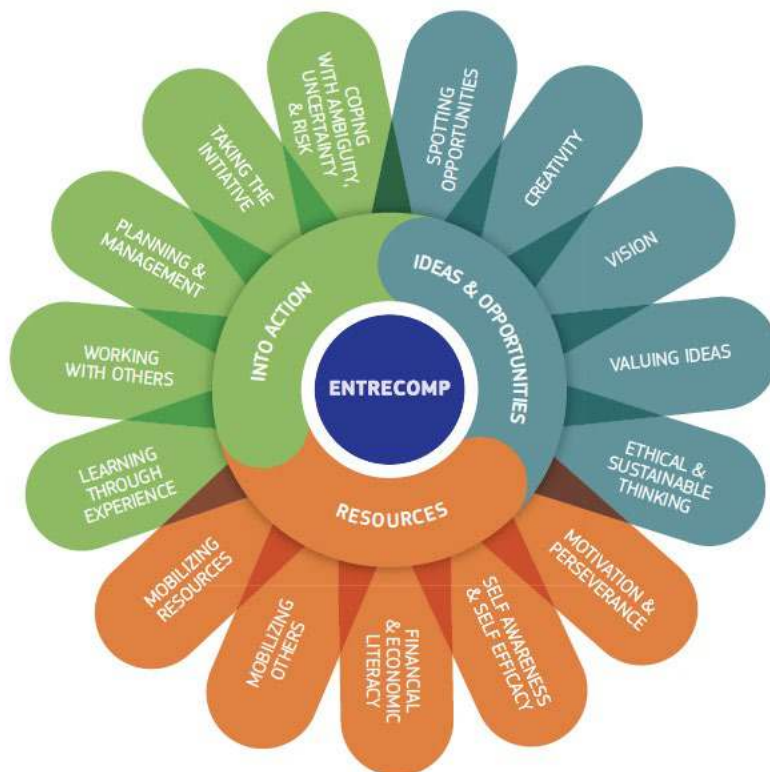
The EU Joint Research Centre's EntreComp Framework is the EU's de facto guide for citizens

Discussion of key findings

EU Joint Research Centre's EntreComp Framework (Bacigalupo et al., 2016) helped Wales to kickstart a new Curriculum. Based on Four Purposes designed by Graham Donaldson, one of these is 'Creative Enterprising Contributors (Wales Hwb, nd). Underpinning the Four Purposes are 'Skills Integral to the Four Purposes', which are grounded in the concept of value creation. This is described as a virtuous circle where creative thinking (breadth of synthesis) leads into critical thinking and decision making, followed by personal effectiveness (including self-evaluation and learning from failure), then planning and organising. Reflection and adaptations learned from interdisciplinary experiences explicitly feed into the review process.

To ensure this greater interdisciplinarity, often seen as the key to innovation, subjects are grouped into six 'Areas of Learning Excellence' (AoLE), and interactions between these areas are anticipated. These areas are: Expressive Arts; Health and Well-being; Humanities; Languages, Literacy and Communication; Mathematics and Numeracy; Science and Technology. Each AoLE has its own 'What Matters Statements', which also ensure alignment with the Four Purposes. Learning outcomes and progression are based on Children's 'I can statements', which ensure competency development as well as knowledge enhancement.

Internationally, Wales drew on experiences in entrepreneurial education from many sources, including the United Nations Conference on Trade and Development's Empretec Program for 42 developing countries. This was revised to focus on learning to become increasingly creative following research I had been fortunate enough to supervise (Mugione and Penaluna / UNCTAD, 2017). By 2018 over 220,000 trainees had participated and countries such as Ecuador had embraced the approach nationally. Rwanda had set up a teacher training program and Angola reported that 72% of their trainees felt able to set up themselves in the next 3 years. Other reviews considered competency factors and numbers of new jobs created, for example in Brazil this rose to 20% more employees than prior to the intervention. At Secretary General level, these and other successes led them to conclude that:

"… while business training programmes on hard skills help aspiring entrepreneurs at earlier stages in setting up their businesses, they are not improving business performance in the long term. Training programmes that focus on psychological factors and soft skills to establish an entrepreneurial mindset obtain better results, improving long-term business performance." (United Nations Secretary General, 2020).

To bring us back to the UK, and to consider the position in Wales, once again a key issue was bring together ministries to ensure joined up policy making. Subsequently, the Welsh National Academy for Educational Leadership (NAEL), was created as an 'arm's length body' to inform Welsh Government.NAEL adopt the notion that learning for Hindsight is the assessment domain of examinations and tests, learning for Insight is the domain of learners' ability to synthesise as well critically appraise, and learning for Foresight is the domain of projects and assignments that link best guesses, in order to predict potential futures. These broadly align with Pedagogy, Andragogy and Heutagogy in their entrepreneurial approach (Jones, Penaluna and Penaluna, 2019).

Moreover, supportive distinctions between learning for Implementation (working towards a known goal using accepted knowledge and approaches) and learning for Innovation (as innovative solutions typically surprise / cannot be forecast to measure against), help learner evaluation metrics (Penaluna and Penaluna / OECD (2015). Accordingly, new GCSE's are being written that will be launched in 2027.

The APPG for Entrepreneurship has commended Wales, suggesting that England "…contrasts with Wales and the rest of the EU where such inter-departmental cooperation has been achieved" (Conway / APPG Entrepreneurship, 2022, 4). As the APPG previously suggested a pipeline approach and in a political context commended the QAA's work, this is perhaps unsurprising, "Given the calibre of the UK's higher education sector, it is perhaps to be expected that we punch our weight when it comes to expertise on enterprise education. Many responses to the Call for Evidence specifically lauded the QAA 2012 guidance on Enterprise and Entrepreneurship" (APPG Entrepreneurship, 2018,7).

Policy and practice recommendations

Lessons from these experiences could inform other country's developments in entrepreneurial learning at school level, especially when considering how entrepreneurial learning develops and progresses. For example:

- Education and Learning from beyond the domain of the Business School can compliment entrepreneurial learning strategies. Design education pedagogies that have greater depth than Design Thinking models for example, can directly inform progress.

- The EntreComp Framework can be enhanced and contextualised to individual country requirements.

- Knowledge harvesting, as is evidenced in the cases described, is different from knowledge retention. In an age of generative AI, the ability to meaningfully synthesise is as important as being able to critically appraise.

- Schooling and education that leads by developing abilities in creativity and innovation, can support and motivate learners to become more enterprising thinkers, which in turn can encourage business and entrepreneurship.

- Making distinction between being creative and enterprising and business knowledge for start-up, offers better opportunities for meaningful assessment of learner progress – as seen through QAA, OECD and UNCTAD definitional stances.

- Bringing together of a range of interested ministries, especially those responsible for business and education, ensures enhanced policy development in entrepreneurial education.

- Interdisciplinarity can be achieved through policies that support a breadth as well as a depth of learning but must consider competency development as well as knowledge acquisition.

- Much has been achieved to create entrepreneurial learning pipelines, but without policy leadership, such as the case in England, it may be left to enthused individuals and businesses to fill the gap.

- Soft Skills and being enterprising are essential in modern learning, employability, and entrepreneurial endeavour, but these take a re-appraisal of the purpose of schooling before they can be effectively developed.

References

Anderson S. Culkin N. Penaluna A. Smith, K. / All Party Parliamentary Group for Micro Business (2014). An Education System Fit for an Entrepreneur: Fifth Report by the All-Party Parliamentary Group for Micro Businesses. London: Stationary Office.

APPG Entrepreneurship (2018). Entrepreneurship Education. London: All Party Parliamentary Group for Entrepreneurship / Ten – The Entrepreneurs Network

Bacigalupo M. Kampylis p. Punie E. Van den Brande L. (2016) EntreComp - The Entrepreneurship Competence Framework. Seville: European Joint Research Centre. Online at: https://publications.jrc.ec.europa.eu/repository/handle/JRC101581

Conway F. / APPG Entrepreneurship (2022). Entrepreneurship Education. London: All Party Parliamentary Group for Entrepreneurship / Ten – The Entrepreneurs Network

Jones C. Penaluna K. and Penaluna A. (2019) The promise of andragogy, heutagogy and academagogy to enterprise and entrepreneurship pedagogy. Education + Training, Vol 61 (9): 764-775.

Jónsdóttir S and Macdonald A. (2013). Pedagogy and settings in innovation education. In L. V. Shavinina (Ed.), The Routledge international handbook of innovation education (pp. 273-287). London: Routledge.

Mugione F. and Penaluna A. / United Nations Conference on Trade and Development (UNCTAD) (2017). Developing and Evaluating Enhanced Innovative Thinking Skills in Learners. Chapter 7 in James, J., Preece, J and Valdes-Cotera , R. (Eds.) Entrepreneurial Learning City Regions: Delivering on the UNESCO 2013, Beijing Declaration on Building Learning Cities.

Penaluna A. Penaluna K. / OECD (2015). Entrepreneurial Education in Practice: Part 2 – Building Motivation and Competencies. Potsdam: OECD360 (a partnership between OECD LEED and European Commission DG Education and Culture). Online at: https://www.oecd.org/cfe/leed/Entrepreneurial-Education-Practice-pt2.pdf

Penaluna, A. and Penaluna, K. (2020), 'In search of entrepreneurial competencies: Peripheral vision and multi-disciplinary inspiration', Industry and Higher Education, Vol 35 (4): 471-484

Penaluna A. Penaluna K. and Polenakovik R. (2020). Developing entrepreneurial education in national school curricula: lessons from North Macedonia and Wales. Entrepreneurship Education Vol. 3: 245 –263.

QAA (2012-18). Enterprise and Entrepreneurship Education: Guidance for UK Higher Education Providers. Gloucester: Quality Assurance Agency for Higher Education. Online at: https://www.qaa.ac.uk/the-quality-code/enterprise-and-entrepreneurship-education

United Nations Secretary General (2020). 75th Session of the Report of the Secretary General, Provisional Agenda Item 18.22 (27 July 2020).

Wales Hwb (nd). Developing a Vision for Curriculum Design. Online at https://hwb.gov.wales/curriculum-for-wales/designing-your-curriculum/developing-a-vision-for-curriculum-design/#skills-integral-to-the-four-purposes