

Entrepreneurship education: Ireland's solution to economic regeneration?

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Abstract: *The significance of entrepreneurship has come into sharper focus as enterprise and innovation are being flagged as solutions to regenerate the Irish economy. The Irish Innovation Task Force believes that Ireland could become an 'innovation hub', attracting foreign risk capital and international and indigenous entrepreneurs to start and grow companies in Ireland. To realize these ambitions, Ireland needs to create a favourable and stable ecosystem for entrepreneurs through policy, tax, regulation, supply of finance, education and R&D. Irish higher education institutions are being exhorted to play a pivotal role in the development of an enterprise culture through entrepreneurship education (EE) and the production of graduate entrepreneurs. If HEIs are to contribute to Ireland's economic recovery they need to produce graduates capable of applying their knowledge to start and grow their own businesses. Existing paradigms provide an inadequate understanding of the complexities inherent in the provision of entrepreneurship education in Irish HEIs and its role in producing greater numbers of graduate entrepreneurs. There is a need to bridge the credibility gap between government expectations and harsh entrepreneurial realities to determine whether EE is having a positive impact on graduate enterprise development. This paper focuses on EE in Irish higher education and addresses the difficulty of measuring its effectiveness in producing graduate entrepreneurs.*

Keywords: *entrepreneurship; entrepreneurship education; graduate enterprise; graduate entrepreneurs; Ireland*

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It is widely argued in the international literature that sustainable economies emerge from indigenous entrepreneurial ventures. In Ireland this observation has become all the more pertinent in light of the current crisis in the nation's economy. Given the enormous

contribution of small and medium-sized enterprises (SMEs) to the worldwide economy, it is little wonder that the Irish government is redefining and dedicating economic policies in favour of SMEs and placing the entrepreneur and enterprise at the heart of its efforts to

deal with this crisis. Increasing the supply of entrepreneurial talent to create and grow new businesses is seen as one way of generating employment and rejuvenating the beleaguered Irish economy. The ability to grow and foster entrepreneurship is viewed by the Irish government and policy makers as the key catalyst for stimulating increases in gross domestic product (GDP), job creation and exports. Given the current economic and fiscal difficulties, the government is focusing on high value foreign direct investment (FDI) and the creation of indigenous, export-orientated companies as a solution to regenerate the economy and as a source of future growth. For Ireland to secure its economic future, it needs to create a favourable and stable environment through the implementation of and support for policies, taxation and regulation, supply of finance, education and R&D, for people to create and grow their own businesses. There are encouraging signs that this strategy is working, as shown for instance by recent FDI announcements such as those relating to PayPal, Prometric, BSKyB, MasterCard and Abbot (Industrial Development Authority, 2012). Similarly, the indigenous sector, particularly in strategic areas such as software development, biotechnology and internationally traded services, has been successful in creating high value jobs; that is, 'from the neck up'.

Higher education has a considerable role to play in increasing the supply of entrepreneurial talent to create new businesses and future employment and to generate wealth. The OECD (2008) identifies the need to define, articulate and increase awareness of an explicit Third Mission of HEIs to promote entrepreneurship and provide corresponding public funding to support this. This view is supported by the Innovation Task Force (Government of Ireland, 2010), which recognizes that Irish HEIs are central to the innovation economy and requires the government to keep faith with its investment in the higher education sector to develop people and knowledge. Amongst other recommendations, it calls for: (a) investing 3% of GDP in R&D; (b) more initiatives by the HE sector to cultivate innovation and entrepreneurship at both undergraduate and postgraduate level; and (c) cultivating entrepreneurial HEIs. If implemented, this would allow the Irish HE sector to underpin the growth and rejuvenation of the Irish economy and play a pivotal role in fostering entrepreneurial student mindsets and supplying future entrepreneurs. This paper examines (a) the changing paradigm of higher education; (b) the role of Irish HEIs in enterprise development; (c) current provision of and approaches to Entrepreneurial Education (EE) in Irish HEIs; (d) the role of the entrepreneurship educator; and (e) evaluating the

effectiveness of EE. In doing so, it questions whether EE is Ireland's answer to economic regeneration.

The changing paradigm of higher education

The traditional higher education paradigm has evolved and is now characterized by a strong focus on the development of academic entrepreneurship through the commercialization of higher education research and campus and graduate enterprise development. HEIs encompass a number of roles: teaching, research and translation of scientific research into economic development through knowledge transfer (Etzkowitz *et al*, 2000 and Barry, 2004). This is what Etzkowitz *et al* (2000) refer to as an 'entrepreneurial university', whose purpose is to transform academic knowledge into economic and social utility (Clark, 1998). With a focus on effective knowledge transfer and the creation of new campus businesses, entrepreneurial HEIs also enhance the competitive advantage of existing enterprise entities both in and outside HEIs.

Entrepreneurial HEIs include teaching and research activities as core to their mission whilst also focusing on academic entrepreneurship as a key contributor to economic development. Essentially, an entrepreneurial HEI should comprise (i) spin-offs and spin-ins; (ii) EE; (iii) links with SMEs and industry; (iv) the development of diverse income streams; and (v) campus incubators. Van der Sijde and Ridder (1999) argue that the best guarantee for sustainability of entrepreneurship within an HEI is to change it into an entrepreneurial organization; that is, what holds for the integration of entrepreneurship in the academic curricula also holds for the commercialization of research via spin-off companies.

The emergence of entrepreneurial HEIs has generated a debate in relation to the specific function and role of HEIs in terms of their service to society (Barry, 2004). In the knowledge economy, entrepreneurial HEIs will be as important as entrepreneurial businesses in stimulating enterprise and economic growth. However, amongst some academics the notion of entrepreneurship is pejorative. Some commentators, such as Garvin (2010) and Bok (2003, cited by Gibb *et al*, 2009), caution against the prostitution of HEIs and paint an image of the Third Mission, or regard enterprise within the context of higher education, as 'a shady villainy, a fifth column, gnawing away at the basic values that define a university, a wolf masquerading as a milch-cow' (McNay, 2002, p 16). Geiger (2004, cited by O'Foghlú, 2010) argues that the extent to which simplistic economic models hold true for commercial companies does not apply to the higher education sector. However,

he does acknowledge the extent to which the metaphor of the marketplace is central to the changes that have taken place in these spheres over the past two decades (*ibid*). These concerns are shared by the Provost of Trinity College Dublin, Patrick Prendergast (2011), who argues that:

‘...we must remember what universities are actually intended to do and what they have done successfully as a cornerstone of society for generations. They are educational organisations dedicated to the pursuit of knowledge – so while they must be pro-commercial, they will lose their way if they put commercial activities ahead of the education of students by academics, who are active in research at the frontier of their discipline.’

The challenge for HEIs is to maximize the benefits of R&D, through the commercialization of research and entrepreneurial spin-offs and spin-ins. This requires mobilizing HEIs towards a more responsive approach to the demands of local enterprise, through greater access to each institution's expertise, core competencies and embedded knowledge and research capability of academic staff, students and graduates. HEIs need to be more responsive to the needs and demands of SMES whilst maintaining a fine balance of not compromising academic rigour in favour of short-term commercial gains. Ideally, HEIs should develop strategic partnerships with SMEs and enterprise development agencies (EDAs) to harness the embedded knowledge of their individual institution. Stronger partnerships create opportunities for graduate employment, whereas student placements in SMEs enhance the career prospects of students by adding entrepreneurial skills to core subject expertise. Wolf (2002, p 244) questions whether education matters in the ways in which governments the world over believe that it does and if government education policies are well conceived. She concludes that the answer to both questions must be ‘no’, because two naive beliefs have a distorting influence, namely: (i) the belief in a simple, direct relationship between the amount of education in a society and its future economic growth rate; and (ii) the belief that governments can fine-tune education expenditures to maximize that self-same rate of growth (cited by O’Foghlú, 2010). Mitra (2008) suggests that at the heart of any attempt by an HEI to promote entrepreneurship is the question of the relationship of HEIs with the wider external world of business, commerce and the community. However, Barry (2004) argues that sometimes this has generated a range of mechanistic national and regional policies seeking to convert new ideas to commercial practicality and transfer them to the private sector.

Role of Irish higher education in enterprise development

Irish HEIs support enterprise development through a number of initiatives: EE, knowledge transfer activities, academic spin-offs, spin-ins, the commercialization of R&D, campus incubators; and/or indirectly through networking and training initiatives. Of these, EE is the first and arguably the most important step for embedding an innovative culture in Ireland and realizing the Irish government's vision of creating an ‘innovation hub’. Higher education management is exhorted to accept self-employment as a plausible career option for graduates and therefore embed entrepreneurship across the spectrum of HE curricula. There is a real need for the development of a national policy framework for Irish HE to articulate clearly the expected outcomes to be achieved by the sector over the next ten years from a policy perspective. Thus, it is apparent that Irish HEIs will be required to: (i) be more entrepreneurial; (ii) source alternative income streams; and (iii) achieve significant improvements in productivity and efficiency in the delivery of higher education. As the government's expectations for the sector continue to grow, Irish HEIs will be judged not purely on their teaching and research functions; rather, their performance will be assessed on how they contribute to the development of the knowledge economy, their links with industry and high visibility activities such as EE and campus and graduate entrepreneurship.

Paradoxically, in the past, instead of being rewarded for being entrepreneurial and generating income, Irish HEIs were penalized for doing so with the additional revenues thus generated being deducted from their annual budgets. This was a fundamental flaw in Irish HE policy and highlighted the need for thinking that was more commercially-oriented and pragmatic. Given the contracting public purse, HEIs can no longer rely solely on Exchequer funding for their income. The National Strategy for Higher Education to 2030 Report (Department of Education and Skills, 2011) calls for more entrepreneurial HEIs, capable of generating income from research, lifelong learning, international students, campus enterprise and other entrepreneurial initiatives. It is evident that this requires a significant cultural change and a commitment to develop entrepreneurial skills in HEI management. As Brady and Hegarty noted, it needs,

‘...a profound cultural shift from a carping, destructive approach to one characterized by a much more positive, can-do attitude; from an insular approach to one that is truly global; from a

fear-ridden approach to one that encourages risk-taking and a sense of adventure.' (Brady and Hegarty, 2010)

Brennan *et al* (2005) suggest that understanding academic entrepreneurship has significant merit given policy aspirations and expectations. The reality is that Irish HEIs are driven by environmental forces (the national and global recession): as such, the emerging paradigm of the entrepreneurial university is becoming more widely accepted by HEI management, academic staff, government and policy makers.

As is the case with their international counterparts, Irish HEIs are currently undergoing a 'second revolution', incorporating economic development as part of their mission, which is changing from one that was primarily concerned with EE to one that sees each institution as part of the entrepreneurship system and with an increased imperative to encompass economic and social development in addition to teaching and research functions (Leydesdorff and Etzkowitz, 1998). Neck *et al* 2004 posit that this shift towards a commercial ethos within academia manifests itself in the following ways: (i) the development of an interface environment in HEI to link academia with industry; (ii) the development of internal capacities to administer services to industry; (iii) a cultural change in the academic community's perception of the commercialization of higher education research; (iv) a shift in the motivation of academic staff to engage in partnerships with industry; (v) the development of campus incubators; and (vi) the growth in entrepreneurship activities including EE.

In the past decade, entrepreneurship has entered the realm of Irish higher education through EE, with Irish HEIs being exhorted to play a strategic role in fostering entrepreneurship and drive and increase the rate of entrepreneurial activity by promoting and supporting campus and graduate entrepreneurship. Until the early 1980s there was little or no acknowledgement in Irish economic policy of the intrinsic links between economic growth and the education system (Carr, 1998). A key change of Ireland's economic development policy was the recognition of the importance of education in strengthening the enterprise sector. This led to significant restructuring of the education system by moving away from what was described as 'the bias towards liberal arts and traditional professions' to placing more emphasis on the importance of productive enterprise within [our] society (Culliton, 1992). In the interim, despite many exciting initiatives, collaboration between enterprise and Irish HEIs has been limited; this was attributed to low levels of investment in R&D, a lack of proactive initiatives by Irish HEIs to engage

with industry, poor capacity or resources within enterprises to source, integrate and exploit new ideas and absence of a framework for determining IP rights (Forfás, 2004).

In 2007, Forfás, the Irish National Policy Advisory Board for Enterprise, Trade, Science, Technology and Innovation, published a report entitled *Towards Developing an Entrepreneurship Policy for Ireland*. The report outlined plans to make Ireland a strong entrepreneurial culture, recognized for the innovative quality of its entrepreneurs and acknowledged by entrepreneurs as a world class environment in which to start and grow a business. Forfás (2007) urged HEIs to create opportunities for students to experience entrepreneurship in order to produce graduates who would be capable of using their knowledge and applying it to start up and grow their own businesses (Forfás, 2007). In the same way, the Organisation for Economic Co-operation and Development (OECD, 2008) called on higher education management to show leadership in the promotion of entrepreneurship through courses, knowledge exchanges with enterprise by instilling an enterprise culture, and promoting a greater awareness of the forms and value of entrepreneurship by staff and students. In Ireland it would appear that the focus of Irish HEIs remains on preparing students for employment rather than self-employment, with graduate employment as a key success metric of HEIs.

Millman *et al* (2007, cited by Carey and Matlay 2007), suggest that the key drivers for economic growth are: (i) building an enterprise culture; (ii) encouraging more dynamic start ups; (iii) building the capacity for small business growth; (iv) improving access to finance for small business; (v) encouraging more enterprise in disadvantaged communities and under-represented groups – for example, women and immigrants; (vi) improving small businesses' experience of government services; and (vii) developing better regulation and policy. Carey *et al* (2007) suggest that the first two themes have impacts on higher education, calling on HEIs to deliver new curricula to develop enterprising graduates. In turn, these enterprising graduates may develop high-growth companies – so-called 'gazelles' – and/or have greater employability. Essentially, enterprising graduates would be capable of moving seamlessly between employment and self-employment and *vice versa*.

Current provision of and approaches to EE in Irish HEIs

Schumpeter (1936) believed that successful entrepreneurs bear certain characteristics that are independent of education, training or upbringing and

concluded that an entrepreneur is a special person – an innovator – and suggests that certain extraordinary people have the ability to be entrepreneurs and they bring about extraordinary events. In contrast, Lordan and Cooney (2002) dispel the notion that entrepreneurs have to be exceptionally talented or creative to find a business idea. Within this debate there is a growing acceptance that entrepreneurship is a systematic, organized, rigorous discipline that can be learned, mastered and taught, or at least encouraged, through entrepreneurship education (Anselm, 1993; Drucker, 2002 and Dorf and Byers, 2005). The EC's Report (European Commission, 2006) advocates that HEIs should integrate entrepreneurship as an important part of the curriculum, spread across different subjects, and require or encourage students to take entrepreneurship courses. This suggests that EE at tertiary educational level should be inclusive and cater for students regardless of whether they had prior knowledge of or experience in the subject. The EC report also calls for HEIs to integrate entrepreneurship as an important part of the curriculum, spread across different subjects, and to require or encourage students to take entrepreneurship courses (*ibid*).

Whilst entrepreneurship modules are offered at most Irish HEIs, the subject only began substantially to enter the Irish higher education curriculum in the past decade. The majority of entrepreneurship modules and programmes reside mainly in business schools and this explains the lack of diffusion into non-business curricula. This goes against good practice in EE, which suggests that entrepreneurship ought to be embedded across higher education curricula so that academics, researchers and students could acquire the skills needed to commercialize their ideas and technologies.

A fundamental challenge for Irish entrepreneurship educators and curricula designers is that there is no standard definition of entrepreneurship; and this has led to a lack of uniformity in curricula design and delivery. The lack of sound conceptual frameworks and approaches to entrepreneurial education has resulted in debate about what is the appropriate content for the subject. Moreover, the recognized shortcomings in the definition of entrepreneurship and small business have led to a lack of standardization in the conceptual and assessment approaches of entrepreneurship in Irish HEIs. EE in Irish HEIs is, therefore, based upon a flawed premise: there is a basic assumption that entrepreneurship can be neatly defined, studied and explained in a classroom environment replicated by all students of entrepreneurship. This suggests a need to agree on a standard definition of entrepreneurship for higher education and that entrepreneurship modules should be informed by international best practice and be

of a quality, weighting and quantity that would result in a noticeable impact upon a student's entrepreneurial mindset.

The OECD (2008) recommends that EE in higher education should shift its focus to growth-oriented entrepreneurship. This suggests a movement away from a traditional business management approach to EE, with more attention being given to key business growth strategies such as internationalization, exports and finance and facilitating the development of students' skills to include opportunity identification, risk-taking, strategy-making, leadership, negotiating, building strategic alliances and IP protection. HEIs can then produce graduates of a high calibre with the business acumen needed to recognize and foster creative potential through the creation of high-potential start-ups, HPSUs. Such companies would be capable of achieving high growth, high turnover and high levels of employment, servicing both national and global markets. One of the objectives of EE in Irish higher education is to nurture the personal qualities that form the basis of entrepreneurship – creativity, initiative and a spirit of independence. The net result of EE will be the deployment of an entrepreneurial mindset amongst faculty and students and improving the probability of campus and/or graduate enterprise development. Irish HEIs are placing a greater emphasis on EE to stimulate the development of entrepreneurial mindsets in students and graduates. Whilst fostering entrepreneurship is not necessarily a function of HEIs' direct intervention in new venture creation, it can be a function of skills training; that is, the training of people who could contribute to the development of entrepreneurial organizations through their employment (Mitra, 2008). The focus on certain practical skills such as problem solving and creativity, and on interpersonal and cognitive skills, can lead to the development of entrepreneurial capabilities and mindsets necessary for entrepreneurial activity.

Whilst Irish HEIs are recognized as playing a key role in EE, they need to employ innovative pedagogical and learning approaches which will encourage learners to strengthen their entrepreneurial self-efficacy – in other words, to instil the enduring belief that they, as learners, have the ability to perform specific tasks and anchor their intentions to pursue innovative careers, important factors in the successful pursuit of entrepreneurial careers. Wilson (2008) recommends the application of 'learning-by-doing', or experiential learning, through project-based learning, student placements, case studies and consulting and recommends the recruitment of entrepreneurship educators with enterprise experience. Friedrich *et al* (2006) propose an action-based model that is cognitive

Table 1. Approaches to entrepreneurship education at undergraduate and postgraduate levels.

Approaches	Under-graduate	Post-graduate
Entrepreneurship modules	✓	✓
Feasibility studies	✓	✓
Business plan competitions	✓	✓
Case studies	✓	✓
Guest lecturers	✓	✓
Avatars – simulated enterprises	✓	✓
Campus incubators		✓
Enterprise boot camps	✓	
Placements in SMEs	✓	
Enterprise platform programme		✓
Links with graduate entrepreneurs	✓	✓
Consulting with SMEs	✓	
Links with enterprise development agencies	✓	✓
Enterprise clinics with enterprise boards	✓	✓
Blended learning modules		✓
Links with industrial liaison office	Limited	Limited

in character and applies different principles of action theory, namely heuristics, learning-by-doing and providing differentiated feedback. It is imperative that innovative approaches to teaching and learning, which stimulate students and develop their self-confidence and commitment to pursuing entrepreneurial careers, are used. Computer simulations offer entrepreneurial students multiple experiences of simulated new venture decision making within wider local, regional, national and international learning contexts (Mitra, 2008). EE in Irish HEIs takes many forms, as shown in Table 1.

Handy (2001, p 76) maintains that entrepreneurs draw strength from a climate of experimentation and creativity. Given that culture and education are

intrinsically linked and can be mutually reinforcing, educators can shape cultural values; and a positive culture will increase the effectiveness of EE. Educators can experiment with and develop critical learning environments, to enable students or prospective entrepreneurs to draw strength from a surrounding climate of experimentation and creativity (*ibid*, pp 76–77). Whilst some might regard creativity and experiment as untidy and sometimes unwelcome to the logical mind, clusters of experiments can be cultivated, ‘golden seeds’ can be sown wherever justified and young people can be encouraged to be inventive, all without upsetting the ordered progress of the mainstream organization (*ibid*). As Leonard Cohen (Cohen, 1992) suggests, ‘...forget the perfect offering, there is a crack in everything, that is how the light gets in’. Unfortunately, the high student–teacher ratios in Irish HEIs militate against experiential learning and this can influence the teaching methods employed. Good practice in EE requires buy-in from the four main stakeholders – HEI management, entrepreneurship educators, students and EDAs – and can be summarized as shown in Table 2.

In the past decade, the Irish government has invested significantly in the development of the physical campus enterprise infrastructure; however, whilst campus incubators have been a welcome addition to the Irish higher education landscape, they are often located off-campus and at a significant remove from undergraduate and postgraduate students. Consequently, there are few interactions between the physical enterprise infrastructure and EE: many students do not use the campus incubator facilities. The disconnect between the physical and the human enterprise capital is a squandered opportunity, but it could be overcome through promoting the campus incubator as an

Table 2. Good practice in entrepreneurship education in Irish HE.

HEI management

- Support and commitment of an entrepreneurial HEI
- Commitment to the core principles of entrepreneurship education
- Embed entrepreneurship across the HEI curricula
- Recruitment of dynamic entrepreneurship educators with enterprise experience
- Optimization of links with enterprise development agencies
- Creative spaces for students to trial business ideas
- Clear intellectual property policies for students and staff

Students

- Active engagement in entrepreneurship classes
- Development of enterprise clubs
- Participation in local and national enterprise awards
- Participation in placements in SMEs

Entrepreneurship educators

- Create correct environment
- Use experiential teaching and learning methods
- Innovative forms of assessment
- Continuous evaluation of the relevance and currency of entrepreneurship education
- Links with real world and graduate entrepreneurs
- Greater links with campus incubator
- Entrepreneurship boot camps

Enterprise development agencies

- Facilitate links and networks with real world entrepreneurs
- Sponsor student enterprise competitions
- Provide seed funding for graduate SME development

innovation hub to students, graduates and educators. By initiating real and practical synergies between the undergraduate and postgraduate, academic and enterprise communities, campus incubators could provide a stimulating and supportive environment for campus and regional enterprise development. Ideally, curricula and assessment methods should promote the development of critical thinking, self-directed learning, communication and influencing skills and team work, and embed entrepreneurship and innovation at all levels of the education system. This, too, requires innovative approaches to teaching and assessing entrepreneurship and the success of EE in the Irish HE sector is dependent on the presence of dynamic, enthusiastic educators to support and advise students to consider enterprise as an alternative career option.

Role of entrepreneurship educators

'If you want to build a ship, don't drum up the men to go to the forest to gather wood, saw it, and nail the planks together. Instead, teach them the desire for the sea.' (de Saint-Exupéry, 1943/1991)

In the development of appropriate entrepreneurship courses, Saint-Exupéry's views are apposite with regard to the discussion of the role of educators in both conveying not just knowledge about enterprise but also instilling a passion for the subject amongst their students. Given acceptance of George Bernard Shaw's (1903) assertion, that 'He who can, does. He who cannot, teaches,' it is difficult to understand the role or validity of educators not having enterprise experience. Thus, a key challenge is how educators can achieve this passion without having experienced entrepreneurship first-hand. A good educator is not only a pedagogical expert but also someone possessing a deep knowledge and understanding of the content (in this case, entrepreneurship) because the content and process are to be taken forward and in tandem (Martin *et al*, 2011). This presents significant challenges to entrepreneurship educators; few of them have both the rare combination of experience and knowledge of both entrepreneurship and pedagogy (*ibid*).

The EC Survey of Entrepreneurship in HE (European Commission, Enterprise and Industry Directorate General, 2008) shows that the quality of EE is dependent upon whether the entrepreneurship educators have had real experience of working in an SME or business start up. It concludes that in some HEIs it was a requirement that academic staff should have first-hand experience of entrepreneurship in order both to appreciate and communicate fully the benefits and obstacles of entrepreneurial activities. On average, less

than one third of all entrepreneurship educators had acquired such personal, practical experience of entrepreneurship activities outside of academia. The EU Report concluded that most EE in HEIs was still theory-based and in only a few cases was enriched or punctuated with personal, practical experience (Martin *et al*, 2011).

Practical knowledge of SMEs and enterprise development is essential in order to help educators understand and teach entrepreneurship better. More importantly, it gives educators greater credibility amongst students: the teachers can prove that they have 'walked the talk', in terms of working in a start-up business. Educators can also facilitate the development of relationships between students and graduates with entrepreneurs, other academic staff and enterprise development agencies. To this end, educators should be encouraged and, where possible, incentivized to set up their own businesses. These educators would then be *au fait* with the challenges of business start-up and better able to offer practical, real-world solutions to overcome these challenges. Without such experience, educators could be regarded, with some justification, as lacking credibility and capable only of transmitting theoretical knowledge of how to start a business. This highlights a need for the continuing professional development (CPD) of entrepreneurship educators in appropriate pedagogies and assessment methodologies, to capture the entrepreneurial learning process.

Given this elusive aspect of EE, educators ideally need to have or be given some form of business experience. This may not necessarily come from getting educators to work in a business; it might occur through greater engagement with SMEs and alumni who have experienced various business development routes. Many HEIs compensate by employing guest lecturers: the use of practitioners in EE is widespread. Entrepreneurs and practitioners are well placed to teach and act as positive role models to inspire and encourage students towards entrepreneurship. Ideally, educators should have experience in both entrepreneurship and teaching.

Evaluating the effectiveness of entrepreneurship education

Very little is known about the effectiveness of HEIs in generating successful entrepreneurial endeavours based on EE (Potter, 2008). Audits of HEIs internationally focus on measurable outcomes such as commercialization of R&D, number of spin-offs and intellectual property (IP) ownership. Whilst all of these deliverables are success metrics of HEIs in broad entrepreneurial terms, they nonetheless represent the far end/one end of the continuum of entrepreneurship

excellence – the end product of EE. Very little is known about the other end of this continuum; that is, EE and its ability to foster entrepreneurship endeavour and excellence in HEIs. Evaluating the effectiveness of EE in Irish HEIs is critically important in tracking graduate career paths and adjusting EE to the needs of students, SMEs and other key stakeholders such as EDAs.

Long-term sustainable funding for EE and enterprise initiatives will be contingent on the perceived effectiveness of the EE. However, measuring the effectiveness of EE at tertiary level is a difficult and complicated endeavour, given the time lag that often occurs between graduates leaving college and then establishing their businesses. Evaluating the effectiveness of EE is not a facile exercise of measuring inputs and outputs; consequently, there is a lack of empirically rigorous research to substantiate HEIs' claims that their graduates benefit significantly from EE and set up profitable new businesses (Potter, 2008). It mirrors the observation, attributed to Albert Einstein, that 'what counts can't always be counted and what can be counted doesn't always count'. According to Matlay (2006), much of the specialist knowledge in EE still relies upon anecdotal evidence or tenuous links between a government-driven expansion of the educational system and an overall increase in entrepreneurial success. The credibility gap between government rhetoric and harsh entrepreneurial realities needs to be bridged, to determine if EE has a positive impact upon entrepreneurial outcomes and the development of graduate businesses (*ibid*). To this end, Potter (2008) calls for more sophisticated evaluation techniques of EE capable of establishing its effect with regard to government policies and objectives. This requires monitoring graduate entrepreneurship behaviour over time – but it should be an education and enterprise policy imperative.

Conclusions

As is the case with international HEIs, Irish HEIs need to plan, prepare and implement innovation, knowledge and enterprise development strategies as a key part of their institutional mission. They need to be brave and ambitious for their graduates and create the right conditions for entrepreneurship to flourish, by embedding entrepreneurship across the spectrum of their curricula. The lack of accepted paradigms, theories and an agreed definition of entrepreneurship has resulted in ambiguity in the conceptual, pedagogical and assessment approaches to EE in Irish HEIs. HEI management and educators need to: (i) agree on a definition of entrepreneurship; (ii) consider the focus of EE at tertiary level; and (iii) use innovative teaching and

learning approaches and methodologies to develop students' self-confidence, self-efficacy and openness to pursuing entrepreneurial careers. Equally important is the requirement that the government keeps faith with its investment in the HEIs and commits to EE through adequate resourcing and the CPD of entrepreneurship educators. It is no longer sufficient merely to provide the physical enterprise infrastructure: greater emphasis needs to be placed on human capital development – that is, students and educators alike. In essence, it is crucial to continue to improve the quality and relevance of EE that students receive, whilst expanding access and participation further.

Although EE is often cited as a possible panacea to Ireland's economic woes and the means of achieving economic regeneration, there is a lack of empirical research to substantiate the claims of HEIs that graduates benefit significantly from EE. To sustain and support the recognition of EE, empirical evidence must be provided to examine the factors that promote or militate against graduate entrepreneurship and to determine if EE has an impact on graduate entrepreneurs' career choice. In truth, EE is one of many factors in the government's innovation ecosystem and it has a pivotal role to play in Ireland's economic regeneration. Given the call for entrepreneurial HEIs, the quality and sustainability of graduate entrepreneurship will become a new metric against which Irish HEIs will be evaluated.

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