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Shaping the New Generation of Irish Entrepreneurs: Overcoming the Challenges and Barriers

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INTRODUCTION

There is increasing interest and commentary on how entrepreneurship and innovation can help countries to develop economic growth through the indigenisation of corporate wealth (EC, 2008; Dept of Taoiseach, 2008; GEM Report, 2007). In Ireland, where there is a history of reliance on foreign direct investment to fuel economic success, there has been a recent movement to develop the competency and propensity of Irish business start-ups, particularly through strengthening entrepreneurial capacity and skills. Additionally, the policy environment at EU and national levels highlights the importance of investing in research and development, boosting SME capabilities (EESC, 2007; EI, 2006) and developing a new generation of entrepreneurial graduates who will be equipped to contribute to macro-economic growth through micro-economic competencies.

Commentary increasingly recognises that the teaching and research missions of universities are expanding to encompass entrepreneurship (Hannon, P., 2005). At the centre of this movement are our country's higher education institutes (HEIs) where a natural home for the work of inspiring and shaping the next generation of entrepreneurs can be found. Furthermore, it has been noted that entrepreneurial skills can be taught (Blenker et. al, 2006) and that this teaching can take a unique and innovative approach (EC, 2008). This paradigm shift is not simply felt in the subject area of entrepreneurship, traditionally seated in business schools, but across all disciplines.

According to the European Commission (2008; p7), "the important role of education in promoting more entrepreneurial attitudes and behaviours is now widely recognised.

However, the benefits of entrepreneurship education are not limited to start-ups, innovative ventures and new jobs. Entrepreneurship refers to an individual's ability to turn ideas into action and is therefore a key competence for all, helping young people to be more creative and self confident in whatever they undertake." It is for these reasons that this paper uses the broadest definition of entrepreneurship from contributing to existing enterprise, social development and new or developing enterprise.

The paper emphasises the development of students' entrepreneurial skills at third level as one of the essential building blocks in the Irish economy for new enterprise, existing enterprise and social enterprise. The paper discusses a qualitative approach to a recent study of Irish HEIs and their practices and perceptions on entrepreneurship education. The findings of this paper are timely. Ireland faces far more economic uncertainty than could have been predicted and furthermore, the current policy environment has committed to developing third level research and development and entrepreneurial activity.

One of the main objectives of this paper is to define the key challenges that HEIs face in shaping the next generation of Irish entrepreneurs and suggesting several ways in which these challenges might be overcome. The paper examines the findings of a recent study of 20 Higher Education Institutes in Ireland across four stakeholder groups that encompass Presidents, Academics in Business and Non-Business disciplines and Technology Transfer Offices. The study is indicative of the attitudes and structures that are shaping the next generation of Irish entrepreneurs and was undertaken as part of a SIF II project entitled the Accelerating Campus

Entrepreneurship (ACE) Initiative which is aimed at creating the entrepreneurial graduate.

Firstly, the paper will discuss a policy context for entrepreneurship education in Ireland and go on to summarise some survey findings. The discussion will move on to define five key elements of entrepreneurship education before outlining the challenges and barriers that respondents perceive to affect the ability of educators to deliver effective entrepreneurship education to students.

The research and survey findings strongly suggest that national, institutional and programmatic structures are required to assist educators overcome the immense array of challenges they face. With this in mind, the paper concludes with a summation of the main findings, recommendations for areas of potential process innovation and the identification of actors who can affect positive change before outlining some implications for future research.

The research, findings and recommendations herein are intended to assist educators who wish to boost their organisational and programmatic capacity for innovation, creativity, ideas and cultivating an entrepreneurial mindset amongst students.

IRISH POLICY CONTEXT FOR ENTREPRENEURSHIP EDUCATION

Ireland has been traditionally dependent upon Foreign Direct Investment (FDI) which accounts for much of its industrial output and exports. Indigenous industries are finding it increasingly difficult to compete and the recent economic crisis is taking a

serious toll on all businesses from the micro-enterprise to the multi-national. Since the introduction of the Small Business Act for Europe in June 2008, individual EU member countries have begun to strengthen their SME policy. This will increasingly acknowledge the very definite contribution that the SME sector can make to the economy and will encourage economic growth through increasing the number of new start-ups.

The National Development Plan (2007-2013) recognises the contribution that enterprise will make to economic growth whilst the GEM Report (2007) highlights that it is within the remit of government to create a cohesive environment that fosters enterprise.

Furthermore, Ireland has promised to invest \$5 billion in research driven innovation between 2006 and 2013 as part of its National Development Plan (IGPO, 2007). This investment in technology and innovation is designed to double the number of Ph.D. graduates and attract young people into research careers in knowledge-driven companies and aimed at fostering the new knowledge economy through our research institutions. The investment, which will be implemented between 2006 and 2013, is certainly linked to commercialization outcomes and the sheer body of knowledge that will be generated and tested as part of PhD programmes. Additionally investment in knowledge and innovation at an EU level will be stimulated by the research Framework Programme 7 which encompasses the new Competitiveness and Innovation Framework (EESC, 2008).

Even these amounts of investment will not unlock the true value of Ireland's knowledge and innovation potential. In 2007 the EU recognized that in itself FP7 would only represent 1/50th of the target amount required to truly drive forward the knowledge economy. In fact, the Lisbon Strategy, and subsequent Barcelona agreement (EESC, 2007) outlines that the target amount for investment in research and development and the amount judged to be necessary in order to drive forward the knowledge economy is 3% of GDP with 2/3 coming from private sector. This approach would embed industry, academic and governmental relationships in a strategic and unified system.

Based on the planned levels of investment from national and EU sources, HEI's in general could therefore expect a massive upsurge in knowledge creation associated with their mission of teaching and research alone. Additionally, the desire in the EU to increase funding to the Barcelona target will mean that there will be a clear future for knowledge creation and enterprise well into the future. This said, graduates will still require the skills to realise profit from these discoveries and new knowledge and it is here that the importance and urgency of robust entrepreneurship education is seen.

It is within this context that government policy has recognised the growing importance of the role that third level education plays in promoting entrepreneurship as a viable career option and developing a culture of enterprise. GEM 2007 Ireland Report highlights that the rates of entrepreneurship are highest amongst those with third or fourth level (postgraduate) education with one in ten adults being an early stage entrepreneur yet the same report further highlights that there is an absence of a coherent entrepreneurial education strategy.

To have a vibrant, successful knowledge economy, Ireland needs to increase the number and quality of indigenous companies and create graduates who think and act entrepreneurially. The Government has recently pledged to “progress the provision of entrepreneurship and management training skills on scientific and engineering doctoral programmes in universities” (Dept of Taoiseach, 2008) under the ‘Building the Smart Economy’ strategy, however, aligning Higher Education with this goal requires the development of new approaches to entrepreneurship education.

The EU (2008; p40) outlines a varied list of indicators of success for good practice in entrepreneurship education under the following headings:

- Public policy: such as the presence of a national support framework or the geographic and cross-sectoral mobility of academics
- Institutional factors: for example inclusion of entrepreneurship education as a strategic goal, quality assurance processes, IP policies, research programmes, esteem and emphasis on the subject area, multidisciplinary approaches
- Educators: findings suggest that academics who incorporate a student-led approach to teaching and learning and blend academic and practical experience make impact and focussing on the ‘entrepreneurial way of life’ rather than specific start-ups encourages wide engagement
- External framework conditions: such factors as skills developed during primary and secondary levels, the venture capital infrastructure and networks and programmes for information sharing at national and international levels are also of importance

In light of this, the challenges issues and barriers identified through the ACE Initiative study create some key areas where development, growth and innovation are necessary in order to optimise how HEIs in Ireland deliver entrepreneurship education and thus impact the quantity and quality of measurable entrepreneurial activity.

METHODOLOGY

This research focuses on the challenges, issues and barriers in delivering entrepreneurship education identified by respondents of a recent study of 20 Irish HEIs. The paper uses an exploratory research approach attempt to identify and explore new theoretical insights that are suggested by the initial results. Research suggests that a holistic understanding of organisations can be developed by using a case study methodology which examines a phenomenon in its naturalistic context (Fox-Wolfgramm, 1997, Peikkari, R, 2009). These 20 HEIs form solid cases, representative of the entrepreneurship education landscape in Ireland, through which we can examine the overall perceptions and responses collected by the ACE Initiative and also propose possible theories that can be tested in the future.

The ACE Initiative is aimed at Creating the Entrepreneurial Graduate and will pilot initiatives in each of the five consortium partners. The aim is for students to engage actively in innovative, entrepreneurial programmes and as a result to become more confident of their sense of judgment; more adept at decision-making and ideas generation and more resourceful in making these ideas a reality.

The study method was developed in two related but distinct phases; the first phase involved a review of current best practices in entrepreneurship education and a policy and literature review at international and national levels. The review focused on published reports, articles, conference proceedings and government reports in order to firstly develop a body of knowledge with a specific focus on Ireland and define gaps in current research.

The second phase involved primary research to gain an insight into current views and practices in Ireland on how entrepreneurship education is currently being implemented. This phase involved conducting structured interviews across four stakeholder groups that encompass Presidents, Academics in Business and Non-Business disciplines and Technology Transfer Offices. Identifying these four key stakeholder groups and delivering a tailored set of questions to each group allowed for triangulation of data (Jick, 1979).

The survey was designed to collect quantitative and qualitative information on the following key areas:

1. Teaching and Learning
2. Resources
3. Strategy, Policies, Culture
4. Infrastructure
5. Multi-disciplinary Approaches
6. Development
7. Design and Co-ordination of Entrepreneurship Education for Non-Business Disciplines

8. Innovation, Technology, Entrepreneurship and Commercialisation

The study was conducted by a research consortium led by DkIT and funded under the Strategic Innovation Fund Cycle II that includes NUI Galway, IT Sligo, IT Blanchardstown and CIT. The results were uploaded to a central online electronic survey tool (Survey Monkey; see www.surveymonkey.com) which collated the results and allowed an analysis of all responses received. The analysis of these overall outcomes form the basis of this paper which compares the responses across stakeholder groups and identifies the key challenges, issues and barriers outlined by respondents.

FINDINGS AND DISCUSSION

As part of the study Presidents, or their nominee outlined the top goals for entrepreneurship education as being broadly in line with policy:

1. To foster entrepreneurial behaviours, skills and mindsets and to increase the number of graduate start-ups
2. To seek opportunities for commercially exploiting knowledge present at the institution
3. To inspire students towards and entrepreneurial career or life

Despite this, the findings of the overall study indicate that new approaches to entrepreneurship education may not be in use. With regard to teaching and learning methodologies, lecturing was the predominant delivery mechanism and most respondents indicated that there is no curriculum development fund available to

develop entrepreneurship education at their institute. Additionally, most report that business disciplines have the best access to entrepreneurship courses with science and technology lagging somewhat behind.

However, there were benefits associated with entrepreneurial activity because many respondents indicated that the institute generates income from entrepreneurship related activities for example advisory services or workshop fees. Sources of external funding for entrepreneurial activity that were identified included HEA, SIF, IDA, SFI, County Enterprise Boards, and EI which re-affirms the essential role that government funding plays in this space.

The main two mechanisms to introduce entrepreneurship education to Irish students from non-business backgrounds are through the Technology Transfer Office (TTO)/Industrial Liaison Office (ILO) activities and by using business-plan competitions. Whilst most institutions have a defined technology transfer process, just under half of these integrate this process into entrepreneurship education. A varied list of other entrepreneurship related activity was also identified for in-curricular, extra-curricular, business plan and competition based initiatives as outlined in table 1 below.

Table 1 – Types and examples of entrepreneurship activities in Irish HEIs

Type	Response
In-Curricular	<ul style="list-style-type: none"> • Guest speakers and lecture • Academic modules or part modules • Project work with or without a multidisciplinary focus • Industry placement • Business game or venture simulation

Extra-Curricular	<ul style="list-style-type: none"> • Entrepreneurs society or forum • Commercialisation and mentoring • Enterprise week and business week • Sabbatical exchange for academics • Workshops and blue-sky days
Business Plan and Competitions	<ul style="list-style-type: none"> • Enterprise Ireland competition • Newstalk student competition • Involvement of Irish Marketing Institute • AIB Innovation Fund • General exhibitions, local initiatives

However, there is no overall standard or mechanism where learning outcomes and assessment for each activity can be captured and adapted at institutions; additionally some extra-curricular activities had scope for accreditation within curricula.

These findings suggest that, despite the essential role of government in funding and co-ordinating entrepreneurial activity, there is a fragmented national approach. Whilst there is evidence of very innovative activity at local level, the policy and strategy do not uniformly manifest themselves in the third level sector. This indicates an area where positive change can be affected through a co-ordinated approach by key stakeholders.

The main changes respondents themselves reported as necessary to implement successful entrepreneurship education relate to;

- programme rigidity
- lack of co-ordination at academic centres
- changing mindsets
- communicating with potential students
- staff incentives
- impact of modularisation.

Challenges Issues and Barriers Identified by Respondents

One of the most significant findings of the study is the sheer depth and breadth of challenges facing HEIs, as outlined in table 2 below. Respondents were asked to identify the key challenges facing graduates wishing to pursue a business opportunity.

Table 2 Challenges Identified by respondents (by type)

Challenge Type	Aspect / Detail
Academic	<ul style="list-style-type: none"> • Whether entrepreneurship education is an elective rather than mandatory course offering • Matching learning outcomes to industry needs • Creating an awareness of risk management
Financial and Economic	<ul style="list-style-type: none"> • Access to capital requires experience • Prohibitive legislation on bankruptcy • Current economic climate prevents investment in new programmes • Current economic climate prohibits growth of new businesses
Personal	<ul style="list-style-type: none"> • Appropriate transferable skills • Self-development • Teamwork • Fear of failure / risk aversion • Age of students impacts their credibility • Perception of entrepreneurship as a viable career path
Technical	<ul style="list-style-type: none"> • Opportunity recognition • Feasibility studies • Sustainability of technology ideas
Structural	<ul style="list-style-type: none"> • Disjointed agency/policy environment • Lack of networks and industry contacts • Resources for academics who would like to provide entrepreneurship education • No one-stop-shop for student entrepreneurs • Access to support and services

This is a notable finding given the need for Ireland to develop indigenous entrepreneurs.

Furthermore, respondents were asked what the key challenges were in implementing effective entrepreneurship education at their institute. The results indicate that there is broad agreement across HEIs in Ireland and within stakeholder groups as to the main issues in play. Table 3 below outlines that there are clear similarities as to the challenges and issues being faced.

Table 3 –Most frequently cited barriers to Entrepreneurship Education identified by respondents

	Business Academic	Non-Business Head of School	President	TTO/ILO
1	Depends on the efforts of a single person	Depends on the efforts of a single person	Depends on the efforts of a single person	Limited expertise/ competence
		Poor policy environment and government support	Poor policy environment and government support	
2	Lacks strategic integration at an institutional level	Limited expertise/ competence	Lacks strategic integration at an institutional level	Depends on the efforts of a single person
		Limited time for academics to engage properly	Limited time for academics to engage properly	Limited time for academics to engage properly
			No recognition for excellence at institution	
3	No academic credibility in entrepreneurship education	Lacks strategic integration at an institutional level		No recognition for excellence at institution

The main perceived barrier to delivering entrepreneurship education in Irish HEIs is that activity depends on the efforts of a single champion. This can be interpreted as ‘bottom-up’ activity defined by isolated instances of good practice. Developing and delivering entrepreneurship is significantly affected by the internal organisational structure of an institution. Yet, in over half of the HEIs studied, no one person had the primary responsibility for entrepreneurship at a strategic level. Respondents further indicated that entrepreneurship education relies on one or a few people within their institution. Furthermore, the efforts of entrepreneurship champions are being

eroded because of structural issues, for example not having a centre or chair to provide a locus for activity.

Conversely the perception that there is an absence of articulated strategic policy for entrepreneurship education, both institutionally and nationally, that would support education and practice among staff and students at all levels and across all disciplines indicates the lack of a 'top-down' approach. Respondents to the study have indicated that changing mindsets is a key challenge for improving entrepreneurship education at an institutional level. However, the results outlined above in table 3 indicate that this is a national trend that requires a cultural shift to reverse.

The use of experience-based teaching methods is critical to developing entrepreneurial skills and abilities. A key challenge will lie in sourcing sufficient numbers of "qualified" entrepreneurial educators who may have had direct or indirect experience of starting and/or operating their own business. Traditionally, entrepreneurial teaching has not been highly valued in many institutions with little or no incentives or rewards to engage in programmes with the entrepreneur/business environment. Educators must be encouraged to enhance their own teaching skills or develop new teaching methodologies which will develop the necessary skills for the entrepreneurs of tomorrow.

The majority of institutions do not import teaching methods or avail of a formalised national exchange of good practice in entrepreneurship education. A major challenge is to create a network and networking opportunities for academics to develop and enhance good practices based on the experiences of others.

Five elements of Entrepreneurship Education in Ireland

The responses to questions on current practices, resources and funding suggest that entrepreneurship education in Ireland can be characterised by five elements:

1. Funding Opportunities: HEIs leverage existing financial support structures to sustain entrepreneurship activity, however, there is a fragmented national approach to the provision of financial supports for student start-ups.
2. Government Agencies: Agencies play an essential role in supporting entrepreneurial activity in Ireland. HEIs must be aware of the local, regional and international landscape of government agencies to enable students to leverage the extensive services and contacts to fuel their entrepreneurial activity and mindset.
3. TTO/ILO Activities: TTOs are the cornerstone of commercialisation activity at third level institutions and are the natural locus for entrepreneurial activity. These centres have the potential to compliment and enhance the academic offering of HEIs through engaging with student entrepreneurs by providing the legal, commercial and mentoring services that are needed to progress business ideas.
4. Culture of Innovation: This is perhaps the least tangible of the five elements, yet the one most likely to result in change toward an innovative and entrepreneurial mindset for both staff and students of HEIs. Encouraging activities that promote networking, innovation and risk-taking in a safe, controlled environment of the HEI are proven to achieve results (ACE Initiative, 2009).

5. Academic and Research Programmes: The provision of new programmes and improvement of existing programmes that amalgamate technical disciplines with innovation and business knowledge using new and innovative methodologies.

These five elements can be graphically represented by figure 1 below. Using the indicators outlined by the EU in their 2008 report, students can be enabled to develop appropriate competencies and knowledge around each element.

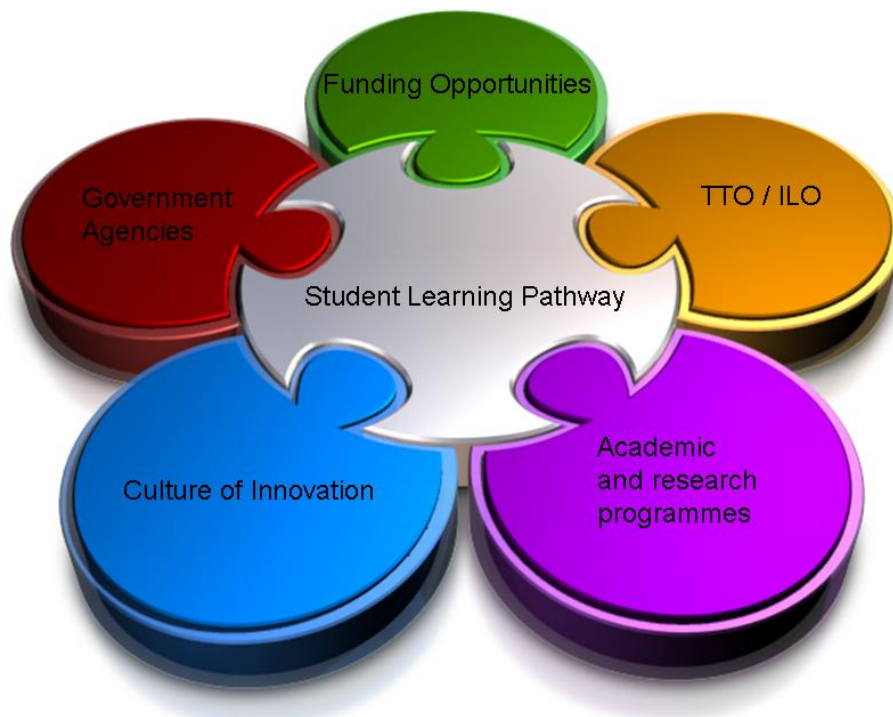


Fig 1 – The key elements of entrepreneurship education in Ireland

Framework to Improve Entrepreneurship Education Practices

The discussion above has enabled several important knowledge gaps to be identified through the analysis of survey responses on how the perceived challenges and barriers identified impact on the effective delivery of entrepreneurship education in Ireland.

The following framework illustrates the inter-relationships of some key themes outlined in this paper and operates on two main levels; policy and implementation. This framework can be seen as a step toward overcoming the specific challenges, issues and barriers that have been outlined in this research.

At a national policy level, the framework advocates a move toward stimulating the ‘entrepreneurial way of life’ and indigenising corporate wealth through developing competencies and propensities throughout the population. Whilst research innovation is clearly a current priority, the corresponding entrepreneurial skills should also be resourced and without this essential step, research investment will not gain optimal outcomes. Following from this idea, national policy should also work by providing a streamlined educational offering from primary to tertiary level and beyond so that the full benefits of entrepreneurship education can be realised through economic growth.

Figure 2 also represents the broad supports that will be necessary to leverage from a strong policy environment to implement successful changes. Legitimising the role and function of academics and academic offerings combined with practical measurements and assessment methodologies for assessing new and alternative pedagogical tools would mitigate several of the key challenges respondents identified

at survey. Investing in curriculum development is another important factor in raising the standard of current offerings. From the perspective of the learner, dedicated on-Campus enterprise spaces, hot-desks would provide a locus for student led enterprise activity. Innovative new ways to fund student start-ups are important since access to finance has been identified as being of concern to survey respondents.

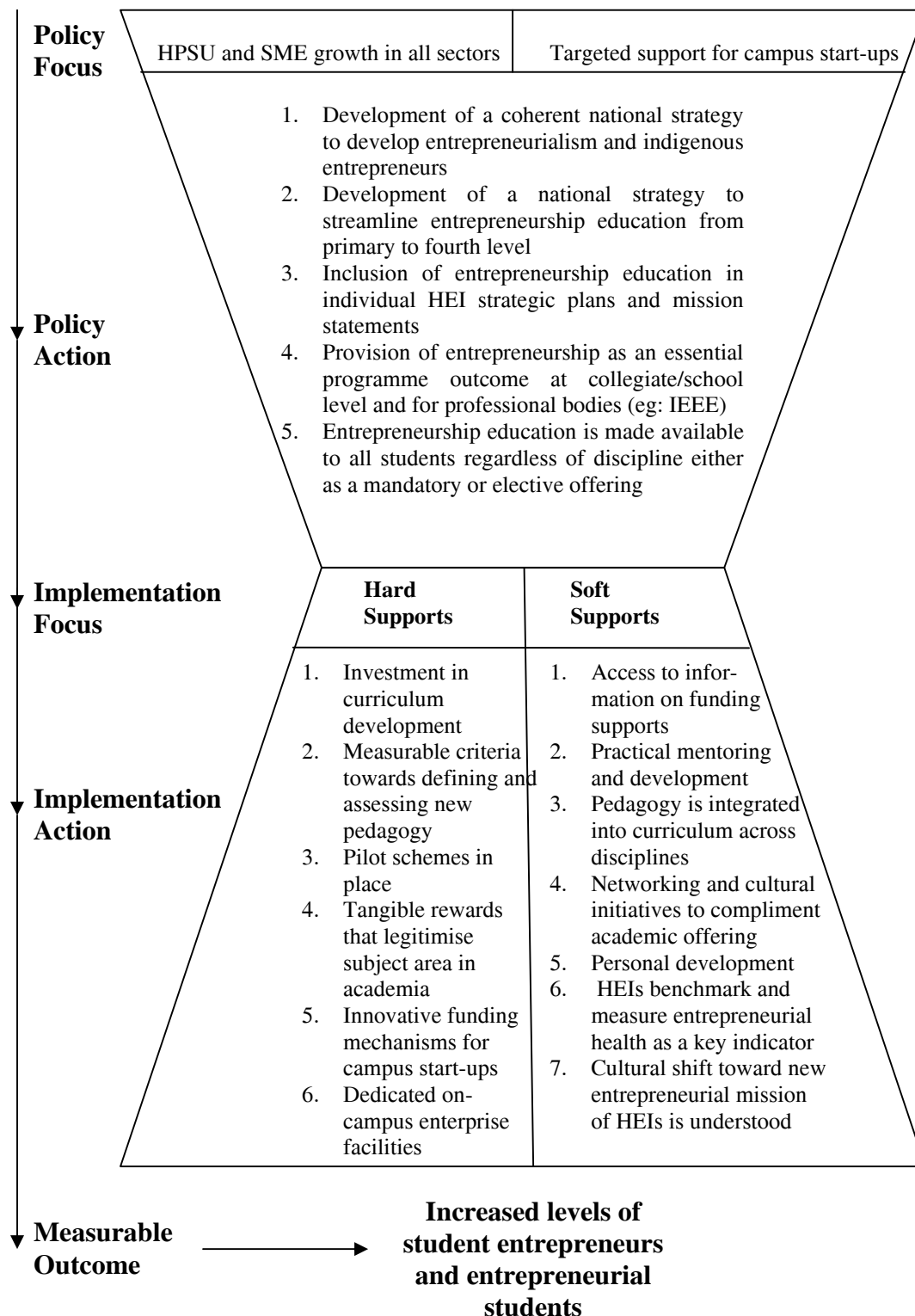


Figure 2 - Framework for Improving the Delivery of Entrepreneurship Education in Ireland

Once these aspects of the framework are defined, the work of putting students at the centre of their learning pathway will start to be realised through the use of innovative pedagogy and pedagogical tools, access to funding information, practical mentoring and support, new skills that are acquired through curricular and co-curricular activities and an ongoing process of quality assurance and benchmarking against the new entrepreneurial mission of HEIs.

CONCLUSION

The objectives of this paper were to examine the findings of a recent all-island survey of 20 Irish HEIs and focus on the challenges, issues and barriers identified by respondents that would impact on shaping the new generation of entrepreneurs in Ireland. Furthermore the paper found that the challenges identified by disparate groups of respondents resonated at a national level and indicated that action is required to mitigate them if an effective support system for entrepreneurship education is to be developed in order to support the prevailing national and EU policy focus on research and innovation, SME growth and economic gain using the HEI as a key agent for growth in the knowledge economy. In addition, using entrepreneurship in its broadest definition there can be many benefits of creating entrepreneurially minded graduates who can act for social enterprise, social organisations and to affect positive change for existing enterprise.

Recommendations: Identifying areas for process innovation

With the above framework in mind, a structure for process innovation around improving the delivery of entrepreneurship education in Ireland will become possible.

Table 4 outlines the role that key actors will play in improving the delivery of entrepreneurship education in Ireland.

Table 4 – Main actors and their roles in process innovation

Main Actors Identified	Potential Process Innovations
Government	<ul style="list-style-type: none"> • Strategy for vertical integration of entrepreneurship education from first to fourth levels • Invest in curriculum development • Define standards and assessment for the pedagogy of entrepreneurship education • Develop funding and venture capital structures for campus start-ups
HEIs	<ul style="list-style-type: none"> • Incorporate an entrepreneurial mission alongside teaching and research • Create legitimacy and tangible rewards for academics to engage • Advocate inclusion of entrepreneurial programmatic and learning outcomes across disciplines • Leverage Industrial Liaison or Technology Transfer Office activities and competencies
Industry bodies & industry	<ul style="list-style-type: none"> • Develop discipline specific programmatic standards for entrepreneurship • Engage with academia in the delivery of practitioner-led initiatives such as guest lectures, real-life projects and mentorship
Educators	<ul style="list-style-type: none"> • Participate in the development and delivery of ‘train-the-trainer’ initiatives • Develop and incorporate new tools and methodologies into modules, course and programmes that support entrepreneurship education

The development of a coherent and streamlined policy environment that is structured and supported by appropriate implementation activities for the hard and soft supports outlined in the framework could ultimately result in measurable outcomes from the numbers of HEIs, educators, students engaged in entrepreneurship.

Implications for further research

This paper has touched upon many aspects of entrepreneurship education and delivery in Ireland and suggested ways in which the main challenges and barriers could be

overcome, however it has not been possible to investigate several issues that are worthy of further research and would advance the subject area for practitioners.

While educators struggle to implement multi-disciplinary approaches to entrepreneurship education, the same must be said for public policy. Entrepreneurship education spans several different government portfolios such as enterprise and education and the role of government in supporting top-down initiatives warrants further investigation since data has not been collected as to this groups perceptions of entrepreneurship education in Ireland.

Additionally, work into the accreditation of new and innovative assessment methods and maintaining quality outcomes to advance the pedagogy and legitimacy of entrepreneurship education would be of benefit in this space.

Lastly expanding, testing and documenting the potential areas of process innovations outlined in this paper might even result in some interesting and stimulating changes to the landscape of entrepreneurship education that can be disseminated more widely to communicate lessons learned.

In conclusion, it is suggested that whilst there is a richness of activity evidenced in the survey findings, entrepreneurship education in Ireland lacks essential structures to capture the momentum of ‘bottom-up’ activities and legitimise new and innovative pedagogical tools through ‘top-down’ strategy and policy environments.

BIBLIOGRAPHY

Robertson, I. et. Al. (2007); *Developing Entrepreneurial Graduates: Putting Entrepreneurship at the Centre for higher Education*; NCGE, NESTA, CIHE

Engel J.S., Charron D (2006); *Technology Entrepreneurship Education - theory to practice.*

Gibb, A.A. (1994); *Do we really teach small business the way we should?*; *Journal of Small Business and Entrepreneurship*, Vol.11 No.2.

Lähdeniemi, M et. al. (2008); *Higher Education Institutions & Innovation in the Knowledge Society*; AMKtutka

European Commission for Enterprise and Industry Directorate General, (2008); "Entrepreneurship in Higher Education, especially in non-business studies"

Gibb, A. (2005); 'The Future of Entrepreneurship Education – determining the Basis for Coherent Policy and Practice.'

Hanti, S., Kairisto-Mertanen, L., (2006); 'Making Students Learn about Entrepreneurship through Real Life Company Assignments,' in EFMD 36th EISB Conference, Southampton, 2006.

Kairisto-Mertanen, L., Mertanen, O., (2005); 'New Ways for Teaching Working Life Related Skills to Engineering Students', International Conference on Engineering Education. Gliwice, Poland.

McGowan, P. and Bridge, S. (2008); 'Building the Case for Entrepreneurship in Higher Education Institutions', - the Northern Ireland Centre for Entrepreneurship (NICENT) Case Study.

E Chell, S Baines, (2000); *Networking Entrepreneurship and microbusiness behaviour- Entrepreneurship & Regional Development*, Volume 12, Issue 3

Commonwealth of Australia (2000); *Commercialising University Research in Australia*

Hannon, P. (2005); *Towards the Entrepreneurial University: Entrepreneurship Education as a Lever for Change*; National Council for Graduate Entrepreneurship

Downey, L. (2003); *Creating Ireland's Innovation Society: The Next Step*; Forfás & HEA

Fayloe, A. (2007); *Handbook of Research in Entrepreneurship Education*; Edward Elgar Publishing

Shane, S.A. (2004); *Academic Entrepreneurship*; Edward Elgar Publishing

Enterprise Ireland (2006); Intellectual Property Protection Fund for the Higher Education Sector;

Yencken, J. & Ralston, L. (2005); Evaluation Of incentives for Commercialisation of Research in Australian Universities; Australian Government

Fox-Wolfgramm, S.J. (1997), Towards Developing a Methodology for Doing Qualitative Research: The Dynamic-Comparative Case Study Approach. Scandinavian Journal of Management Vol 13 Issue 4, December 1997, Pages 439-455

Freeman, P. & Barron, E. (2007); Managing Student Intellectual Property; NCGE

Laine, K., van der Sijde, P.; Lahdeniemi, M. (2008); Higher Education Institutions and Innovation in the Knowledge Economy; ARENE

Enterprise Ireland (2007); The Irish Entrepreneurs: Role Models for a New Ireland.

Hanti, S., Kairisto-Mertanen, L., Kallio-Gerandler, J. And Rantanen, H. (2008); 'Identifying Entrepreneurial Competencies in three Different Cross-Disciplinary Environments'. FINPIN Conference, Hameenlinna, Finland.

Twaalfhoven B. W. M. (2000); Entrepreneurship Education and its Funding: A comparison between Europe and the United States, European Business Summit Brussels

Streeter D. H., J. P. Jaquette and K. Hovis, (2002); Cornell Working Paper: Department of Applied Economics and Management, Cornell University, Ithaca, New York 14853-7801 USA

Transforming Ireland – A Better Quality of Life for All, National Development Plan 2007-2013, Irish Government Publications Office

Department of the Taoiseach, (2008); Building Ireland's Smart Economy, Government Publications Office

European Economic & Social Committee (2007), Lisbon Strategy 437th Plenary Session, INT/325 Investment in Knowledge & Innovation, Brussels

Strategy for Science, Technology & Innovation 2006-2013, Enterprise Ireland

O'Shea, R., Allen, T., Morse, K. (2007); Delineating the anatomy of an entrepreneurial university: the Massachusetts Institute of Technology experience, R&D Management Vol 37 No. 1

Jick, T.D. (1979) Mixing qualitative and quantitative methods: triangulation in action. Administrative Science Quarterly, 24, 602–611.

Patzelt, Holger, (2009); Strategic Entrepreneurship at Universities: Academic Entrepreneurs' Assessment of Policy Programs., Entrepreneurship: Theory & Practice Jan2009, Vol. 33 Issue 1

Piekkari, R., Welch, C., Paaviainen, E., (2009), The Case Study as a Disciplinary Convention; Evidence from International Business Journals. *Organisational Research Methods*, Volume 12 Number 3, July 2009, Pages 576-589

Shinnar, R., Pruett, M., Toney, B. (2009); Entrepreneurship Education: Attitudes Across Campus, *Journal of Education for Business*, Vol. 84 Issue 3