

University of Galway Research Repository

The Accelerating Campus Entrepreneurship (ACE) initiative: Creating entrepreneurial graduates for Ireland

Title	The Accelerating Campus Entrepreneurship (ACE) initiative: Creating entrepreneurial graduates for Ireland
Author(s)	Coleman, Maébh;Cormican, Kathryn
Publication Date	2010
Publication information	Coleman, M., Hamouda, A. and Cormican, K. (2010) 'The Accelerating Campus Entrepreneurship (ACE) initiative: Creating entrepreneurial graduates for Ireland'. Industry & Higher Education, .
Item record	http://hdl.handle.net/10379/3679

Coleman, M., Hamouda, A. and Cormican, K. (2010) The Accelerating Campus Entrepreneurship (ACE) initiative: Creating entrepreneurial graduates for Ireland. *Industry & Higher Education*, 26, 4, 443-455.

The Accelerating Campus Entrepreneurship (ACE) Initiative: Creating Entrepreneurial Graduates for Ireland

Summary:

According to the GEM Ireland Report (2008), in Ireland those that have exposure to entrepreneurship education have an increased propensity to start a new venture. The importance of entrepreneurial skills was picked up by the European Union, which in its Lisbon Strategy of March 2000, declared its objective of transforming Europe into the most competitive and dynamic knowledge-based economy in the world by 2010, and indicated that it considered entrepreneurship to be one of the 'new basic skills' for this knowledge based economy.

This paper will discuss how Irish HEIs can improve their provision of entrepreneurship education in order to affect positive economic growth. In particular this research explores the approach, process and research of the Accelerating Campus Entrepreneurship (ACE) Initiative, which is a collaborative project between five Irish HEIs aimed at creating the entrepreneurial graduate in Ireland.

Keywords:

Entrepreneurship education, developing entrepreneurial mindsets.

Authors:

1 – Maébh Coleman Programme Manager Technology Transfer Office NUI Galway University Road Galway, Ireland	2 – Angela Hamouda Lecturer, School of Business Dundalk Institute of Technology Dublin Road, Dundalk, Co. Louth Ireland	Dr Kathryn Cormican Senior Lecturer College of Engineering & Informatics NUI Galway University Road Galway, Ireland
--	--	---

The development and presentation of this paper at ISBE was sponsored by Enterprise Ireland. The ACE Initiative is funded by the Higher Education Authority under the Strategic Innovation Fund.

1 Introduction

1.1 Background

Interest and commentary on how entrepreneurship and innovation can boost economic growth is increasing and gaining momentum at policy level (EC, 2008; Dept of Taoiseach, 2008; GEM Report, 2007) especially in light of recent economic challenges. Ireland has traditionally relied heavily upon foreign direct investment (FDI) (O’Gorman & Cooney 2007) however recently, a movement to develop the competency and propensity of Irish business start-ups, particularly through strengthening entrepreneurial capacity and skills, has become apparent.

The policy environment at EU and national levels highlights the importance of investing in research and development and boosting SME capabilities (EESC, 2007; EI, 2006), however given the recent drop in positive perception of entrepreneurial opportunities in Ireland (GEM 2008) it is as yet unclear if these policies can deliver new and innovative entrepreneurs for the knowledge economy.

Cooney & Murray (2008) have linked an increase in the supply of entrepreneurial talent with new business growth and outline that education is one method of increasing this supply. It has also been observed that entrepreneurial skills can be taught (Blenker et. al, 2006) and this teaching can take a unique and innovative approach (EC, 2008).

Additionally, the OECD (2008) observes that developments in the dynamics of knowledge economies, such as a move away from linear models, create a link between public policy and the mission of higher education institutes (HEIs). Furthermore the OECD (2008) has also outlined that higher education has historically played a distinctive role in economic growth, for example as at the time of industrial development in Germany where the supply side measures of education and training played an essential role in the innovation process at that time.

This indicates that our country's HEIs are of key importance in preparing to grow socially and economically in the knowledge economy. Whilst Hannon (2005) identifies that the teaching and research missions of universities are expanding to encompass entrepreneurship, research suggests that there are many challenges to achieving this goal in Ireland (OECD 2008, Cooney & Murray 2008).

What seems apparent from this background is that Irish HEI's role of fostering a new generation of entrepreneurial graduates who are equipped to contribute to macro-economic growth through micro-economic competencies has never been more important. Additionally, an examination of the provision of entrepreneurship education at HEIs in Ireland would be of benefit in assessing if current policy is enough to support this important work amongst practitioners and HEIs.

1.2 Research Objectives

This paper will discuss how Irish HEIs can improve their provision of entrepreneurship education in order to affect positive economic growth. In particular this research explores the approach, process and research of the Accelerating Campus Entrepreneurship (ACE) Initiative, which is a collaborative project between five Irish HEIs aimed at creating the entrepreneurial graduate in Ireland. The paper will discuss how the initiative will develop entrepreneurship education through ‘bottom-up’ and ‘top-down’ approaches that have been informed by the research phase of the project.

In particular the paper aims to:

- Illustrate the landscape of entrepreneurship education at Irish HEIs based on findings from a study of 20 publicly funded Irish HEIs and discuss the impacts of change at student, staff and organizational levels whilst comparing Irish research to the international context.
- Contextualize Irish entrepreneurship education in terms of current government policy and ask whether this policy is enough to manifest real change
- Suggest ways in which new approaches to entrepreneurship education might be implemented by Irish HEIs in order to achieve positive impact on new business growth.

2 Methodology

2.1 Research Approach

The paper uses an exploratory research approach attempt to identify and explore new theoretical insights that are suggested by the results of the study within the context of public policy and current practice in Ireland.

The study method was developed in two related but distinct phases; the first phase involved a review of current best practices in entrepreneurship education. The first phase, literature 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 four surveys. The study also included conducting three study visits to HEIs which exemplified good practice. This was intended to look at entrepreneurship education from a demand side and a supply side perspective. The results from each of the four surveys 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.

1. Demand side surveys

Demand side surveys included surveys administered to undergraduate and postgraduate students at each of the partner institutes and also a questionnaire administered to regional industry.

- a. The undergraduate survey sought to elicit the attitudes of non-business undergraduates towards entrepreneurship and to identify who their key influences are and motivations in terms of starting a business. Additionally, from the enterprise education perspective, the survey asked undergraduates to state the characteristics and enterprise skill sets they perceive as important for creating the entrepreneurial mindset. This survey will be repeated over three consecutive years with the same respondents to track changes over time.
- b. The postgraduate survey intended to snapshot the attitudes and perceptions of post-graduate students. Detailed interviews were carried out with post-graduate students to assess their desire to engage in entrepreneurship activities through the college structures, their understanding and assessment and supports for these activities and how well these activities might correlate with their academic goals as either researchers or as students on taught post-graduate programs.
- c. The enterprise survey aimed to explore the challenges, issues and barriers faced by companies in engaging with HEI's. The online survey consisted of 19 questions with a mixture of open, closed and qualitative questions. The survey was administered electronically to fifty enterprises which are

representative of the regions of the participating institutions and a mix of MNCs, SMEs, incubation companies and social enterprises.

2. Supply side survey

The supply side survey was broader in its application and was designed to collect quantitative and qualitative information nationally on the following key areas:

- a. Teaching and Learning
- b. Resources
- c. Strategy, Policies and Culture
- d. Infrastructure
- e. Multi-disciplinary Approaches
- f. Development
- g. Design and Co-ordination of Entrepreneurship Education for Non-Business Disciplines
- h. Innovation, Technology, Entrepreneurship and Commercialisation

The survey was administered through structured interviews across four stakeholder groups that encompass Presidents or their nominee, Academics in Business and Non-Business disciplines and Technology Transfer Offices.

3. Best practice cases and study visits

Three study visits were conducted with:

- a. NICENT (Northern Ireland Centre for Entrepreneurship) at University of Ulster and Queens University Belfast
- b. University of Satakunta, Finland
- c. NCGE (National Council for Graduate Entrepreneurship), UK

The rationale for including best practice cases is to illustrate best practice from a different perspective and to offer examples and role models that will assist HEIs to introduce and further develop their enterprise related activities. Based on a standard analytical framework, each site visit sought to identify and establish:

- The nature, extent and development of enterprise education and activity within the institute.
- The nature and level of academic engagement.
- Their methods of measuring success of their entrepreneurship education programmes.
- Their approaches to delivering entrepreneurship education and the extracurricular activities which supports academic learning on entrepreneurship programmes.
- The organisational and cultural influences and how they embed entrepreneurship in the curriculum elements.

3 Findings and Discussion

This section will provide an introduction to the approach and processes of the ACE Initiative and providing further detail to key research findings from a demand and supply perspective.

3.1 Painting a richer picture of Irish Entrepreneurship Education

One of the aims of this paper is to illustrate the landscape of entrepreneurship education at Irish HEIs based on findings from a study of 20 publicly funded Irish HEIs. Given the eminent work that has already been produced in this space, the four surveys administered allow a richer picture of current perceptions and practices than has previously been available. In this section, findings will be outlined by describing the demand-side and supply-side dynamics that have been observed.

In defining the research phase of the ACE Initiative, close attention was paid to existing research in this space, particularly to an EU study into entrepreneurship in the higher education sector that focussed on the wider EU community. The Irish surveys of HEI's across four stakeholders, undergraduate and postgraduate students and regional industrial stakeholders of the collaborating HEIs is intended to enrich the current knowledge

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.

Whilst the GEM 2008 report outlines that there have been several significant changes to entrepreneurial activity in Ireland during the course of only a year, the report identifies that Ireland still compares well internationally. Amongst the general population similar levels of entrepreneurs are starting new businesses and there is still a positive culture for entrepreneurship with a higher percentage of the population (80%) believing that entrepreneurs are held in high esteem than the EU (71%) or OECD (69%) averages.

3.1.1 Demand-side Dynamics

Within the context of demand for higher education, this research has explored both undergraduate and postgraduate students and industry within the context of defined surveys. These stakeholders contribute to the market for entrepreneurship education through their needs, perceptions and characteristics and for these reasons it is informative to outline some key findings.

3.1.1.1 Undergraduate Students Perceptions

The ACE Initiative survey revealed that the majority of students who responded (80.8%) are of the opinion that entrepreneurship education is important for the economic growth of Ireland. The majority of the students (78.1%) outlined that they are interested in

starting a business at some stage in the future and they are motivated by wanting to obtain wealth and success (55.9%), and their preference to be their own boss at (53.9%). Other motivations mentioned included:

1. To create a family business
2. To pursue interests
3. To help the community
4. To prove that hard work can pay off

It is interesting to note that a significant majority of the students (72.4%) surveyed from across faculties agreed that entrepreneurship education is an important course element. In order to probe this further, students were asked to state a reason for their answer. The following statements reflect this view:

“we can get an insight into what is involved in starting our own business..”

“..it allows students who don't want to go into mainstream jobs to have a choice”

“..to encourage young people to start their own business and give them the confidence in doing so”

Table 1 below highlights students' perceptions of the entrepreneurial instincts. Although 59.2% report that they would prefer a steady income stream, the average rating of the innovators and risk takers is significant. 58.5% of respondents indicate that they prefer to choose their own path rather than follow others, a trait which is particularly relevant to entrepreneurial activity. Additionally, the highest rating of 59.7% of the sample indicates positive support for risk taking, a key mindset for an entrepreneur.

Table 1 Student's Perceptions of their Entrepreneurial Instincts (n=296)

The OECD (2008) highlights the role of extra curricular activity in supporting entrepreneurship activity at HEIs. The majority of students in this survey (80.5%) felt unsure as to whether there are entrepreneurial networking events and opportunities held for students at their colleges. Only 6.8% felt there are and gave examples of the types of events which are taking place and included the following:

1. Various enterprise competitions (including. Paper Clip Challenge, Dragon's Den)
2. Enterprise Week
3. Innovators Club

3.1.1.2 Postgraduate Student Perceptions

As will later be discussed, the current policy environment is geared heavily toward commercialization of research outcomes so the perception of postgraduate students is important. When asked "Do you think it would be easier/harder to pursue a business idea or commercialisation of your research outside the college?" 63% of respondents indicated that they would prefer to use the HEI infrastructure to commercialise their idea. Only

13% of respondents preferred the idea of pursuing a business activity outside of their HEI and this shows a real need for HEIs to meet student needs.

Conversely, the survey of HEI stakeholders also investigated how the area of commercialisation is treated within entrepreneurship education. While 87.5% of institutions have a defined technology commercialisation process, only 40% of institutions integrate this into entrepreneurship education which is significant. As one respondent put it:

'...the college provides resources and equipment that would be cost prohibitive outside the college environment. There is also more expertise available on campus in many aspects of teaching and research'

When asked to identify roadblocks to commercialisation activities, respondents 81.5% identified that access to finance opportunities would play a significant role in the success or failure of their idea. Whilst another area is networking which table 2 outlines below.

Table 2 Perceived HEI Support for Networking Opportunities

It is clear that postgraduates from non-business backgrounds are having difficulty in accessing networks which is exemplified in this response:

“Business contacts can be hard to make when new to an industry and coming from an engineering background the 'business' concepts are not familiar”

Conversely, from the HEI perspective, Cooney & Murray report that networking amongst academics is important to sharing good practices in entrepreneurship education that will filter on to benefit students. The Irish Network of Teachers & Researchers of Entrepreneurship (INTRE) plays a key role here in enabling educators to support students in this regard.

3.1.1.3 Enterprise and Industry Perceptions

This survey sought to investigate how enterprise could engage with third level colleges to promote entrepreneurship by identifying attitudes and perceptions to entrepreneurship education in industry.

The findings reveal that 50% of respondents thought that communication skills are the most important skill required by entrepreneurial graduates followed by innovative and creative thinking (45.8%) and problem solving skills (34.8%). Surprisingly team-work did not rank highly as a key skill (33%). Other capacities that are seen to be important by prospective employers are how to pitch the business and project management skills.

Respondents also outlined what forms of entrepreneurship education would be most valuable and 45% of respondents felt that real life projects help to promote entrepreneurship. 36% felt that student work placement would be an effective tool in the

pedagogy of entrepreneurship education whilst 37% felt that venture simulations would enable industry-academia partnerships to benefit students' skill profile.

3.1.2 Supply side Dynamics

The supply side of higher education, for the purposes of this paper, include the socio political and institutional environments. This is represented firstly by a policy contextualisation followed by key findings from the ACE Initiative survey of HEIs in Ireland.

3.1.2.1 Policy Contextualisation

The OECD (2008) outline that there is a clear rationale for HEIs to promote an entrepreneurial culture and that social benefits can be achieved, such as increased employment, productivity and economic growth even if the relationship cannot be attributed to hard 'facts'. Additionally, the specific regional benefits of HEI's entrepreneurial culture are outlined (OECD 2008). 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 and this is supported by the work of Cooney & O'Gorman (2008).

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. 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.

Furthermore, Ireland is poised 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.

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 associated 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. This research suggests that lack of such a policy creates a barrier to effective entrepreneurship education and this is evidenced through the survey conducted at 20 Irish HEIs. As we will discover in subsequent sections, policy environment is seen as one of the key challenges for HEIs in this space.

Cooney and Murray (2008) outline that entrepreneurship is broader than new venture creation and encompasses the public sector, not for profit organisations and large organisations. This research has illustrated a policy environment for entrepreneurship education that certainly supports HPSU¹ development from research knowledge, new venture creation and FDI however in the space where public policy and entrepreneurship education engage, it appears from this research that commercialisation is the main focus

¹ High Potential Start Up

of the policy approach. This policy environment has generated the Innovation Taskforce, which has been recently developed by the Dept of the Taoiseach, however its terms of reference are centred around commercialisation of new knowledge, not the broader vision of entrepreneurship that encompasses education at third level.

3.1.2.2 Perceptions of HEI Stakeholders

The perceptions of HEI stakeholders have been shaped through comparing Irish research with comparable international research. The EU commissioned research into entrepreneurship education, especially for non-business disciplines which invited all HEIs in the region to participate in a general survey. Secondly, a more targeted survey was administered to those institutes that performed above a pre-defined threshold based on an agreed framework. Lastly, in-depth interviews were carried out with 46 HEIs across Europe. This work was segmented by HEI type and surveyed Business Schools, Multidisciplinary HEIs with a business school and without and technical institutions.

This created an international framework and through this the secondary research for the ACE Initiative indicated that most Irish HEIs are multidisciplinary, furthermore the ACE Initiative is designed to embed entrepreneurship in non-business disciplines and as such the surveys were aimed at four stakeholder groups within a multidisciplinary environment (presidents, business and non-business academics and technology transfer or industry liaison officers).

Whilst the main categories of the survey are broadly similar, the EU research provides a model and scale under which the ACE Initiative research creates a more holistic view of current practices and perceptions of entrepreneurship education specifically at Irish HEIs.

Within the context of this policy environment, it is important to observe strategic perspectives at the institutional level. In the ACE Initiative HEI survey the ‘Presidents’ group identified that they perceived the top three overarching goals for entrepreneurship at their institution as:

1. Jointly to ‘foster Entrepreneurial behaviors 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 an entrepreneurial career or life’

Comparably, the EU survey (2008) found that the top three goals of best performing institutions:

1. To foster entrepreneurial behaviours, skills and mindsets (58%)
2. To inspire students toward seeking an entrepreneurial career or way of life (67%)
3. To provide access to entrepreneurship opportunities for ALL students at my institution (54%)

Whilst increasing the number of graduate startups and commercial exploitation have been discussed within the context of current policy, fostering entrepreneurial behaviours and

mindsets and inspiring students towards an entrepreneurial career or life are also of interest. Both the EU survey and the ACE research determined that business schools had the most developed entrepreneurship education offerings as figure 1 identifies below.

Figure 1 Overall disciplines which offer In-Curricular Entrepreneurship Courses in Ireland

The findings of the EU survey of good practice institutions identified that entrepreneur in classroom, case studies and project teams were the top three tools used to acquaint students with entrepreneurship. Figure 2 below demonstrates the tools used in the Irish context that were identified in the HEI survey.

Figure 2 Main Teaching Methodologies Used – Business schools

Respondents were also asked to identify ‘other’ mechanisms that acquaint students from non-business backgrounds with entrepreneurship. 63.7% of respondents named either their Technology Transfer Offices; using business plan competitions and new venture simulation across all stakeholder groups. Table 3 below represents a summary of the types and examples of entrepreneurship education activities that respondents identified in the survey.

Table 3 – Types and examples of entrepreneurship activities in Irish HEIs

In relation to multi-disciplinary approaches, when asked if informal structures were in place to allow discussion across disciplines, respondents affirmed this to be the case. For non-business disciplines, 63.6% and for business disciplines, 66.7% responded yes. Interestingly, the highest proportion of positive responses was the TTO/ILO group. 73.3% indicated that informal multi-disciplinary discussion was facilitated by HEI's.

Whilst the EU (2008) and OECD (2008) have identified that the availability of training and qualifications for teaching staff who teach entrepreneurship education is of benefit, many respondents identified that it was not compulsory in Irish HEIs (90.9% - Business Academic, 83.3% Non Business Head of school and 76.9% Presidents) whilst the EU survey revealed an overall rate of 80%.

3.2 Improving the provision of Entrepreneurship Education at Irish HEIs

This paper set out to discover more about how Irish HEIs can improve their provision of entrepreneurship education. From the findings and discussion herein, two issues have emerged.

3.2.1 Challenges and Barriers

Observing the challenges and barriers to entrepreneurship education should enable HEIs to assess their provision, learn from existing knowledge and mitigate against common pitfalls. The EU study found that good practice institutes reported that entrepreneurship depends on the efforts of a single person, that academic staff does not have enough time

to engage with the pedagogy and the adequacy of educator competence as key challenges. The OECD report identified that HEIs are also challenged to identify where interventions can be made in the business development process and respond to this. Additionally, they outline that a framework for the study of entrepreneurship across the curriculum is also a key challenge while responding to SME needs with flexible, cost effective and modular programmes can also be a challenge.

Within the Irish context, Cooney & Murray (2008) report that horizontal and vertical provision of entrepreneurship education as a challenge and further identifies that incorporating innovative new pedagogy into the curriculum can pose a problem. The ACE research further reveals the highest ranking challenges amongst stakeholder groups in table 4 below.

Table 4 Challenges to improving entrepreneurship education

3.2.2 Listening to the market

Entrepreneurs take opportunities that can be recognised within a market. Likewise, if HEIs are to act entrepreneurially, the information outlined has demonstrated that there is an opportunity for HEIs to respond to market needs. Within the Irish context this paper advocates responding to those needs, however such an approach requires action at governmental and institutional levels.

3.2.2.1 Student and Industry Needs

Undergraduate Needs

Many undergraduate students in non-business courses highlighted in the ACE survey that they would like to have a module on entrepreneurship available to them. Additionally many students outlined that HEIs should make students aware of starting a business as a possible career option. Whilst the EU survey revealed that good practice institutes rated the availability of entrepreneurship education to all students as a key goal, in the Irish HEI survey, this goal was not present within the same stakeholder group and this is a salient point for HEIs to bear in mind

The OECD (2008) has noted the role that extra-curricular or co-curricular enterprise activities play in developing the entrepreneurial mindset at HEIs. Undergraduate students agree with this premise with respondents suggesting that high-profile competitions, clubs or physical spaces dedicated to student entrepreneurship would stimulate interest and encouragement. Additionally students found that HEI communication about innovative events and entrepreneurship related activities needed a boost through using web technologies. Particularly students noted that they needed easier access to information on events workshops and opportunities.

Postgraduate needs

The ACE survey shows that postgraduate students want to use their own HEI to commercialise, however this is impaired by the perception that networking opportunities

are not supported by the HEI to the extent that is required. Further evidence suggests a requirement for open and inclusive communication channels that enable postgraduates to engage more comprehensively with the structures and resources that are in place.

Industry needs

Industry revealed that they are willing to participate with academia in the provision of entrepreneurship education and would benefit from entrepreneurially minded graduates, however the skills profile revealed in the ACE survey was surprising since team-work was not valued as highly as communication or project management skills. The OECD (2008) further notes that industry can be more fully accommodated by the academic world through increasing the modular, flexible and cost effective offerings.

3.2.2.2 Holistic approaches to Policy and Strategy

It is interesting to note that in the HEI survey ‘Policy environment’ was ranked highly as a challenge to providing entrepreneurship education in the Irish context. Additionally the same survey revealed that ‘strategic integration at institutional level’ was also ranked highly, yet the EU (2008) reports that there was not a strong link between strategic integration and success in terms of performance. This suggests that government and management buy-in is more likely to be perceived essential to the effective delivery of entrepreneurship education.

The EU Expert Group (2008) has outlined several indicators at policy level that create a positive policy and external framework environment for entrepreneurship education at

third level. Specifically for Ireland many commentators agree (GEM 2008, Cooney & Murray, 2008) that an articulated and coherent entrepreneurship education policy that develops uptake and access to innovative offerings is of great importance.

The OECD (2008, p 321) finds that generally policy supports can encompass a partnership approach with industry and entrepreneurs, governance systems at the HEI level, knowledge sharing on good practices and could also work on the demand side to again increase the motivation to take up current offerings.

3.3 'Pracademically'² meeting the challenges – ACE Initiative

Solutions

EU and Irish policy focuses on strengthening the SME sector (EU, 2007, Irish Govt. Publications Office, 2007) and places an additional emphasis on investment in innovation to stimulate indigenous industry, particularly for technology innovation and research innovation at third level (Dept. of Taoiseach, 2008). However, anecdotally the number of start-ups and SMEs resulting from student/graduate enquiries is relatively low. This suggests a gap between the ability of third level institutions to realise the true aims of such policies in the current environment and to affect these changes by preparing graduates to engage in new venture creation that would result in economic growth.

The ACE Initiative aims to bridge this gap and will result in a profound shift in how entrepreneurial education is delivered in technology programmes. The process will

² Pracademic is a term used to describe practitioners who are academics. In this context, pracademically demonstrates an approach that encompasses practical and academic elements.

require a re-orientation of traditional models, the development of the new staff skills and competencies and the active involvement of industry and entrepreneurs to assist in embedding innovative approaches across disciplines in the third level sector.

Overall, this project aims to provide innovative approaches to entrepreneurship education to ensure students from technology (non-business) programmes take enterprise related modules with the student gaining experience of what it is like to run and operate real businesses and in this way promoting self-employment as a real, attractive and viable career option. The project is funded by the Strategic Innovation Fund (SIF), under the National Development Plan. SIF is a multi-annual fund, which is directed towards support for innovation in higher education institutions. It supports new approaches to enhancing quality and effectiveness within higher education and research. (www.heai.ie).

Each participating Institute will lead out on one of these pillars. The working groups for each element of the project are a combination of academic, non-academic and business people. The active involvement of industry and entrepreneurs will assist in embedding these innovative approaches.

The ACE Initiative will follow a process that takes the collaborative HEIs through four phases:

- **Research:** the research phase has assisted to create a richer picture of entrepreneurship education in Ireland, with an emphasis on non-business disciplines, and define best practice through the study of national and international cases.

- **Development:** The development phase will build upon the research to prepare and define the specifications and parameters for key pilot activities at each institute.
- **Implementation:** in this phase each institute will implement several innovative pilot activities in an identified non-business discipline that are designed to enhance the pedagogy of entrepreneurship education using diverse tools such as real-life experience, peer to peer learning, multi-disciplinary collaborations and formal links with technology transfer structures.
- **Evaluation:** it is perceived that the evaluation phase will enable the collaborative group and other national and international HEIs to learn from the ACE Initiative process using criteria defined by best practice and literature.

With the findings of the ACE Initiative research phase in mind, the ACE Initiative will enable positive steps forward for entrepreneurship education in Ireland. Despite an unstable funding environment, the programme will endeavour to deliver creative and innovative solutions to the problems outlined in this paper. As discussed, the process and approach centres on four targeted actions that are designed to tackle issues at many levels from policy to implementation in order to increase the numbers of entrepreneurial graduates and graduate entrepreneurs.

- **Pedagogy and curriculum development:** This area of activity is centred on furthering the pedagogy of entrepreneurship education and supporting the educators who provide it. Enhancing pedagogical tools and new case study material to enable more educators to engage with and offer entrepreneurship regardless of their discipline is the main

focus. In order to achieve this, identifying key competencies for teaching entrepreneurship and developing appropriate training programmes for educators will be of significance for the programme.

- **Approaches to engagement across disciplines, faculties and sectors:** Having outlined the multi-layered, non-linear and dynamic processes that typically define good practice in entrepreneurship education, this specific action aims to develop and establish mechanisms that support networking across disciplines, faculties and even the academic and industrial sectors. Actors in the entrepreneurial process, not simply those from the education sector can work dynamically and synergistically across disciplines to promote radical change through networking at all levels of the education experience. Establishing this as a formal practice in pilot initiatives would illuminate further instances of good practice in Ireland and boost growth in performance at national, institutional and personal levels.
- **Embedding Technology Entrepreneurship into Non-Business Education:** It has been observed that non-business education does not benefit as much as it could from the provision of entrepreneurship education. The potential for all disciplines to be enriched and to enrich using the pedagogy of entrepreneurship is great and holds much promise for the socio-political and institutional environment that has been described herein. Using ‘real world’ approaches to deepen the academic experience of staff and students is the focus of this targeted action which will see pilot initiatives that can truly leverage facilities such as incubation centres and technology transfer offices whilst implementing meaningful change within programmes.

- **Educational Organisation and Culture Change:** The ACE Initiative realizes that, given the outcomes discussed, organizational and cultural change at HEI level impacts the availability, performance and delivery of entrepreneurship education. In order to assist HEIs in this space, initiatives that will empower the benchmarking, development and ongoing assessment of entrepreneurship education activities are essential. The ACE Initiative has already conducted a study on student and staff attitudes and will further this with tools and processes that equip HEIs to prepare institutionally, academically and practically.

4 Conclusion

This paper has discussed the landscape of entrepreneurship education at Irish HEIs based on findings from a study of 20 publicly funded Irish HEIs and has discussed the impacts of introducing new forms of entrepreneurship education at student, staff and organizational levels by comparing Irish research to the international context. Furthermore, the paper has contextualized Irish entrepreneurship education in terms of supply-side and demand-side dynamics and has debated if current government policy is enough to manifest positive economic growth. Finally the paper has highlighted ways in which new approaches to entrepreneurship education might be implemented by Irish HEIs using the examples of the ACE Initiative.

4.1 Summary

“Entrepreneurship suffers from the myth that it only deals with the creation of a new venture. However, entrepreneurship is much broader than that as it is not just about establishing a new business but instead about a way of thinking and behaving”

Cooney & Murray (2008, p68)

Whilst it can be seen that entrepreneurship policy encompasses start-ups, it also has a social and corporate dimension that represents a less measurable, nonetheless critical, facet to developing economic growth. This can be achieved through promoting innovation and entrepreneurship across existing businesses, charities and the public sector and it is increasingly recognised that HEIs are key actors in this process.

As this paper has discussed, an articulated policy that specifically supports entrepreneurship education in the third level sector would support a more holistic approach to achieving positive economic growth.

4.2 Suggestions for further research

There are a number of suggestions for further research arising from this paper namely:

- Firstly, the Irish findings noted a desire for the buy in of government and senior management. An investigation into the perceptions of entrepreneurship and entrepreneurship education in the public sector would be illuminating and could enable a more complete picture of the ‘triple helix’ (Ektowitz, 2006) of university, industry and government relationships as they relate to innovation and entrepreneurship

- Secondly, the role of networking in the entrepreneurial process has been observed as has the importance of sharing good practice. Research into the role and nature of networking amongst entrepreneurship educators and student entrepreneurs in Ireland would be of benefit in order to define how government and HEI interventions can best enable this key activity.
- Thirdly, peer to peer learning will be an essential part of delivering the ACE Initiative solution in the form of the Student Enterprise Intern. Observations of this emerging national system given its international links and strong track record will be of interest over the coming years.
- Finally, undergraduate and postgraduate students noted that a greater effort is required in communicating entrepreneurship activities and possibilities to them. The role of new and emerging technologies in this function is of interest and could lead to some unique and dynamic approaches.

4.3 Acknowledgements

This paper was enabled by the collaborative research conducted by researchers at Dundalk Institute of Technology, Institute of Technology Blanchardstown, Cork Institute of Technology and Sligo Institute of Technology. Acknowledgement and thanks are extended to Colman, Cormac, Clare, Daniel, Caroline, Doireann, Perry, Cathy, Roisin, Niamh and Fiona in addition to the ACE Initiative Management Committee and International Advisory Committee.

5 Bibliography

Cooney, T.M., Murray, T.M., (2008). Entrepreneurship Education in the Third Level Sector in Ireland. Institute of Minority Entrepreneurship Reports (www.arrow.dit.ie)

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

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

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

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

Ektovitz , H. (2006)- The New Visible hand; an assisted linear model of science & innovation policy. Science and Public Policy, Vol 33 Issue 5 Beech Tree Publishing.

Entrepreneurship in Higher Education, Especially in Non-Business Studies, (2008) Final Report of the Expert Group. Enterprise and Industry Directorate General March 2008

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

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

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

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

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.

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

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

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

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

NIRAS Consultants (2008), Survey of Entrepreneurship in Higher Education in Europe. (October 2008)

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

O'Gorman, B., Cooney, T.M., (2007) An Anthology of Enterprise Policy in Ireland. Irish Journal of Management; 2007, Vol. 28 Issue 2, p1-27, 27p

Potter, J., Ed. (2008) Entrepreneurship and Higher Education – Local Economic and Employment Development - OECD

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

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

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

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

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

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

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

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

Table 1 Student's Perceptions of their Entrepreneurial Instincts (n=296)

Statement	Strongly Agree	Agree	Disagree	Strongly Disagree	Rating Average	Response Count
I continually come up with new ideas	15.3 (43)	57.3% (161)	26.3% (74)	1.1% (3)	2.13	281
I prefer to follow others lead	3.5% (10)	23% (66)	58.5% (168)	15% (43)	2.85	287
I want to be my own boss	38.3% (108)	44% (124)	16% (45)	1.8% (5)	1.81	282
I prefer a steady income stream	31.2% (88)	59.2% (167)	8.5% (24)	1.1% (3)	1.79	282
I like to take risks	20.1% (57)	59.7% (169)	20.1% (57)	0% (0)	2.00	283

Table 2 Perceived HEI Support for Networking Opportunities

Comment	No Support	Little Support	Neither	Some Support	Full Support	Rating Average	Response Count
Formal Engagement with EI	28.0% (7)	20.0% (5)	40.0% (10)	4.0% (1)	8.0% (2)	2.44	25
Potential Customers	41.7% (10)	12.5% (3)	41.7% (10)	4.2% (1)	0.0% (0)	2.08	24
Legal Advice	48.0% (12)	28.0% (7)	16.0% (4)	8.0% (2)	0.0% (0)	1.92	25
Other Researchers in Your Field	19.2% (5)	34.6% (9)	26.9% (7)	15.4% (4)	3.8% (1)	2.5	26
Suppliers	28.0% (7)	28.0% (7)	32.0% (8)	12.0% (3)	0.0% (0)	2.28	25
Other	50.0% (6)	0.0% (0)	25.0% (3)	25.0% (3)	0.0% (0)	3	12

Table 3 – 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

Table 4 Challenges to improving entrepreneurship education

	Business Academic	Non-Business Head of School	President	TTO/ILO
1	Depends on the efforts of a single person (72.7%)	Depends on the efforts of a single person (46.2%)	Depends on the efforts of a single person (50%)	Limited expertise/ competence (50%)
		Policy environment and government support (46.2)	Policy environment and government support (50%)	
2	Lacks strategic integration at an institutional level (45.5%)	Limited expertise/ competence (38.5%)	Limited time for academics to engage properly (30%)	Depends on the efforts of a single person (43.8%)
		Limited time for academics to engage properly (38.5%)	Limited time for academics to engage properly (30%)	Limited time for academics to engage properly (43.8%)
3	No academic credibility in entrepreneurship education (36.4%)	Lacks strategic integration at an institutional level (23.1%)	Lacks strategic integration at an institutional level (30%)	No recognition for excellence at institution (31.3%)

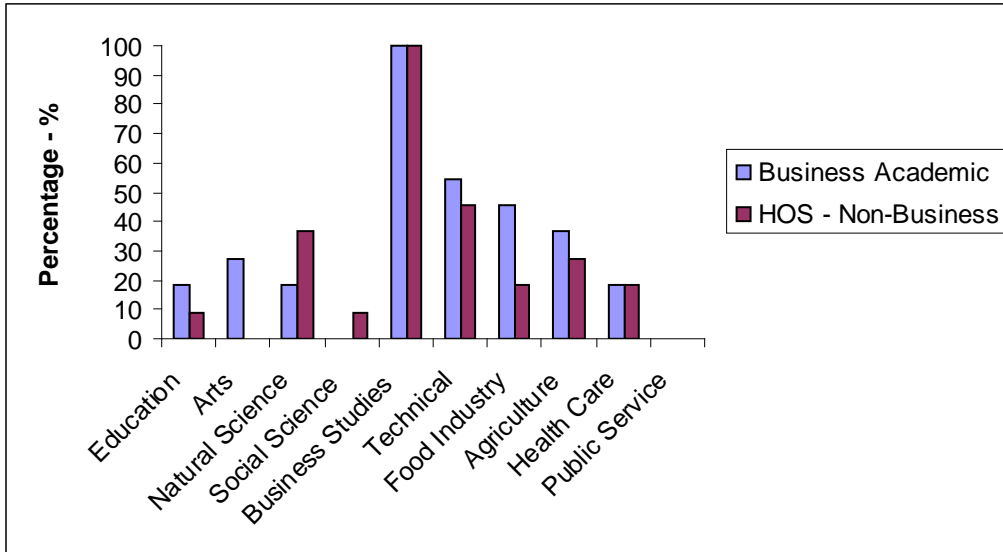


Figure 1 Overall disciplines which offer In-Curricular Entrepreneurship Courses in Ireland

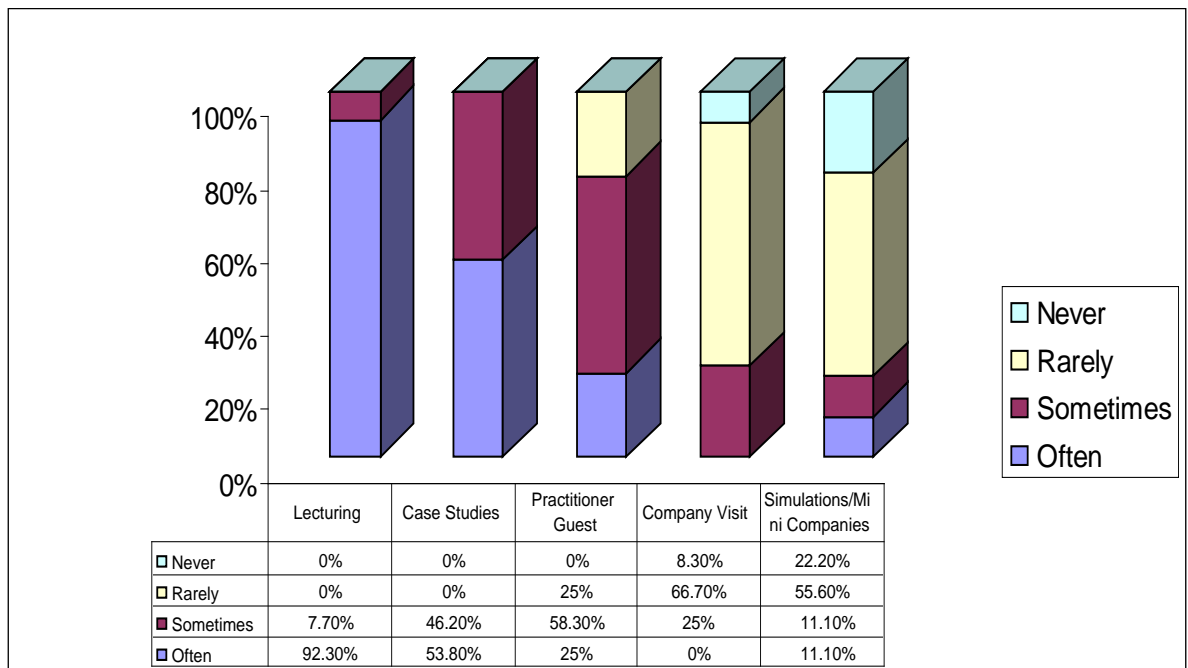


Figure 2 Main Teaching Methodologies Used – Business schools