



CASE STUDIES

THE ACE initiative (Accelerating Campus Entrepreneurship), Ireland¹

**ORGANISATIONAL CAPACITY, PEOPLE AND
INCENTIVES**

**ENTREPRENEURSHIP DEVELOPMENT IN
TEACHING AND LEARNING**

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INTRODUCTION

This case study describes the set-up and impact of ACE (Accelerating Campus Entrepreneurship), an Irish Government funded initiative which was created to embed entrepreneurship within the Irish HEI curriculum specifically to ‘create the entrepreneurial graduate’ for graduates of non-business disciplines.

ACE ran from 2008 to 2014 and was comprised of initially a five, then latterly an eight, partner consortium of Irish HEI’s. ACE was managed and delivered on a cross-institutional, cross-disciplinary basis. When the ACE initiative ended in June 2014 the website, cases and resources were immediately re-launched as CEEN (Campus Entrepreneurship Enterprise Network). CEEN is a national network, accessible to all Irish HEIs. (www.ceen.ie)

The ACE initiative has been pivotal in advancing entrepreneurial teaching and learning within the ACE partner HEIs and has facilitated engagement of the wider Irish HE sector in this agenda. ACE’s strategic approach, enabled through Irish Government investment, was a prerequisite to transformational change and allowed the creation of institutional environments conducive to entrepreneurial teaching and learning.

In order to gain sustained institutional buy-in to supporting entrepreneurship programmes, there is a need for hard evidence that interventions work. It needs to move, beyond the monitoring and feedback, to developing scientific approaches and to testing the impact of educational interventions e.g. using random intervention and control groups. Once you can prove effectiveness, selling the programmes to senior management becomes relatively easy.

This case study sets the context for the ACE initiative, describes the activities delivered, and shares key insights into the impact of ACE, from the perspective of the HEI leadership, staff and students involved.

At the end of the case the ACE activities and successes are mapped on to the HEInnovate dimensions of Entrepreneurship Development in Teaching and Learning and Pathways to Entrepreneurship.

Overview of the ACE Programme

The Higher Education sector in Ireland comprises seven universities and thirteen Institutes of Technology (IOT). The IOTs provide a comprehensive range of courses from craft and apprentice programmes to postgraduate programmes at Diploma, Masters and Doctoral level. Generally, IOTs carry a local government remit of inclusivity and engagement with local industry. Their courses are oriented to meeting specific local employment needs as well as providing robust higher education.

In early 2007, the Irish government invited all 13 IOTs to define educational projects for the new Strategic Innovation Fund (SIF). The Dundalk Institute of Technology (DkIT) expressed an interest in an entrepreneurship education programme. DkIT had a very active enterprise facing Innovation Centre and had already started a Student Enterprise Internship Programme, based on the Scottish Institute of

Enterprise model. This had stimulated an interest in entrepreneurship amongst the student body, who had sent back the message to educators and the DkIT management that this is what the students wanted. The Institute of Technology Blanchardstown, Cork Institute of Technology and IT Sligo expressed an interest in working with DkIT on enterprise education. The National University of Ireland Galway (NUIG), who had already worked with one of the partners, was subsequently invited to participate to bring university perspectives to the project. In 2008, all of these HEIs launched the ACE Initiative under the leadership of DkIT (see ACE partner list in Appendix A). When the SIF programme completed in 2012, three new partners came on board. These were Dublin City University, The Institute of Art, Design and Technology and Dublin Institute of Technology.

ACE was delivered by cross-institutional and cross-disciplinary teams, who were supported by a central programme team based at DkIT. Governance evolved and changed during the project, which was overseen by the ACE Management Committee, and made up of representatives from all partner HEIs. Supporting the Management Committee was an International Advisory Committee which included experts from Canada, Finland and UK, representatives from Enterprise Ireland and County Enterprise Boards (state agencies), and national experts and industry (e.g., Intel Ireland).

ACE was funded by the Irish Government with EUR 1 507 253. A further EUR 1 367 714 worth of HEI match investment was made by the ACE partners. The objective was to embed entrepreneurship education across the Irish HEI curriculum and to bridge the gap between the entrepreneurship activities offered by the Innovation Centres and TTOs (Technology Transfer Offices), as part of integrating business incubation and start-up support and academic programmes on entrepreneurship.

Following completion of ACE in June 2014, the outgoing ACE Board launched CEEN (<http://www.ceen.ie/>). CEEN will build on the body of knowledge developed through the ACE programme, taking forward the lessons learnt as well as sustaining key areas of activity.

ACE organisation, activities and results

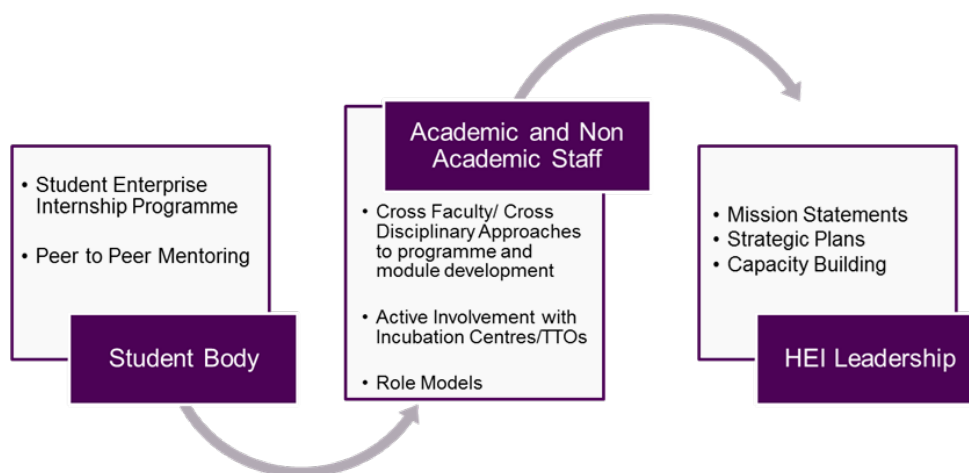
ACE's remit was to create transformational change across all levels within the HEIs, adopting bottom-up and top-down approaches (Figure 1). Through such an approach, ACE sought to create organisational cultures, and structures, where entrepreneurship teaching and learning could thrive. Visible support was put in place to engage all those involved in entrepreneurship within the HEI including leadership, academic and non-academic staff and the student body. It was envisaged that this would be achieved through four targeted actions, represented by four work streams, under which the ACE activities would be planned and delivered. The targeted actions were:

- Targeted Action 1: **Pedagogies, teaching and curriculum development** to support staff development needed to implement the teaching requirements
- Targeted Action 2: **Cross-faculty multidisciplinary approaches** to support the challenges of cross-disciplinary working between subject disciplines
- Targeted Action 3: **Embedding technology entrepreneurship into engineering education and leveraging of non-curriculum activities from incubation centres/technology transfer offices**. This supported wider institution engagement and collaboration, including the cross-fertilisation of ideas and insights between academic, non-academic and administrative staff.

- Targeted Action 4: **Educational organisation and culture change, the development of more entrepreneurial and intrapreneurial approaches.** This addressed issues of culture change, change management and the development of mission statements

Figure 1 below illustrates the "bottom-up top-down" model of ACE and gives examples of activities included at student, staff and leadership levels, of which some are further described in this case study.

Figure 1. ACE involvement levels



Source: ACE evaluation report (2012).

ACE commenced in April 2008. The implementation of the project had 3 main phases, each with very different dynamics and focus.

1. **Research phase**, the exploration of national and international best practice to inform the design of the education programmes.

ACE members worked together, alongside international advisers, on the identification, design and delivery of programmes suited to the interests and circumstances of their HEI. Following completion of the research phase ACE published a research study: *Entrepreneurship Education in Ireland: Towards Creating the Entrepreneurial Graduate*.² The key findings were that entrepreneurship education in Ireland's tertiary education system remained fragmented, delivered mainly as a traditional academic subject within business schools. The study called for entrepreneurial education that is "fit-for-purpose" providing both theoretical knowledge and experiential learning with a focus on developing entrepreneurial skills, behaviours, and attitudes to equip students for entrepreneurial careers or new venture creation.

2. **Implementation phase** during which an extensive range of programmes and activities, both academic and non-academic, were introduced across the partner Institutes. New degree and masters programmes were developed on-site at each of the Institutes.

² Downloadable at <https://www.cit.ie/contentfiles/File/entrepreneurship%20education%20in%20ireland%20research%20report2.pdf?uid=1272470117769>.

3. **On-going evaluation** through gathering feedback from staff and students throughout the six years of the ACE initiative. A full copy of the evaluation report *Evaluation of the ACE Initiative: Towards Creating the Entrepreneurial Graduate (2012)* can be downloaded from the CEEN website (www.ceen.ie). The key findings are described in this report.

The enthusiasm of the staff, and the good will built between them, led to greater levels of output than had been initially targeted (Figure 2). Members were enthused about being part of something that could transform teaching and learning across the Irish HEI sector, and significantly improve outcomes for their students. The table shows the contributions made by Partner Institutes compared to the overall ACE targets.

Figure 2. ACE targets and achievements

Deliverable	Target	Achieved
Cross Institutional Staff involvement in programme development and delivery	40	158
Non-business students engaged in entrepreneurship accredited training/courses	100	318
Other students involved in enterprise related activity	500	11,838
Academic and non-academic staff involved in staff development programmes	60	123
Student Enterprise Internships	5	17
Entrepreneur in Residence Programme	0*	4
Student projects exploring commercialisation	20	349
New student ventures established	10	66
Conference papers disseminated	5	13

Source: ACE evaluation report (2012).

The ACE experience as illustrations of HEInnovate statements

The HEI is structured in such a way that it stimulates and supports the development of entrepreneurial mindsets and skills.

There are mechanisms in place for breaking down traditional boundaries and fostering new relationships - bringing internal stakeholders together (staff and students) and building synergies between them

Embedding entrepreneurship within the curriculum represented a departure from existing practices, and required the ACE teams to engage with new pedagogical approaches to teaching and new learning content. ACE required academic and non-academic staff from a diverse range of institutions and educational disciplines to work together and embrace new thinking and create new learning environments.

The introduction of cross departmental multi-disciplinary approaches required alignment of time tables and schedules, alongside the introduction of new teaching and assessment procedures. This was

highly complex and resource consuming, and brought to light many more differences in approaches, and even conflicts, in procedure than had been expected. Staff had to navigate the often protracted internal programme development processes within their HEIs. Teamwork was particularly valued in the context of the cross disciplinary modules. Despite the challenges, members were enthused about being part of something that could transform teaching and learning across the Irish HE sector, and significantly improve outcomes for their students. Students learnt from others with a different 'mindset' and from different backgrounds.

There are mechanisms in place for breaking down traditional boundaries and fostering new relationships - bringing internal stakeholders together (staff and students) and building synergies between them

ACE was overseen by a Management Committee, which had representatives from all partner HEIs. Supporting the Management Committee was an International Advisory Committee which included experts from Canada, Finland and UK. Additionally there were representatives from Enterprise Ireland and County Enterprise Boards (state agencies), national experts and industry (e.g. Intel Ireland).

For the ACE members at the partner HEIs the support of the management committee and the access to expert advisors was crucial in for the design and delivery of ACE activities. Support initiatives included a Train the Trainers Programme for academics involved in the development and delivery of the ACE activities. Capacity building was an ongoing process. ACE Champions across schools gave support to educators (peer support, advice, etc). New programmes and modules were developed for staff (they did not have to reinvent the wheel!) New learning resources were developed for educators, e.g., ACE published the "Irish Case Studies in Entrepreneurship" as a teaching tool, with teaching notes available to educators. A highlight was the participation of an ACE six-person cross-partner delegation in the Price-Babson Summer School (SEE) programme in the USA.

During 2012, ACE worked closely with HETAC (now QQI), the qualifications standards agency for higher education in Ireland. The aim was to develop standards for entrepreneurship teaching and learning, with a focus on assisting HEIs to sustain healthy "entrepreneurial ecosystems". To this end, ACE delivered a series of regional workshops for HEIs to consult on the proposed guidelines and to support their adoption. These workshops provided educators with practical advice on developing their teaching practice. Participants had a chance to share experiences, learn from others, and take away lessons to promote entrepreneurship education within their organisation. The feedback from educators highlighted the need for ongoing support in developing their teaching practice and the need for opportunities to collaborate with and learn from other educators in this field.³

An example of institutional guidance and peer learning offered by ACE, is the "The Enterprise and Entrepreneurial Learning Level 9 Module for Irish HEIs" developed and delivered by Dublin City University. A total of 20 participants from 17 Irish HEIs and a range of discipline areas completed the programme. The programme focused on supporting educators to develop their teaching and lead entrepreneurship integration within their own HEIs. The evaluation of the first pilot phase, in March 2014, received an overall positive response from participants. The programme has been adopted to support a national drive to embed entrepreneurship within the HEI curriculum. As part of the overall programme assessment, each participant had to submit an individual proposal on developing entrepreneurship education in her/his own institution. An overview of these proposals is given in the diagram below. A longitudinal study is planned to measure the impact of these proposals on the

³ The HETAC Draft EEE Guidelines can be downloaded at http://www.ceen.ie/DatabaseDocs/lib_4465293__hetac_draftguidelineseee1.pdf.

participant's institution and, in doing so, the extent to which the programme has effected change in embedding entrepreneurship teaching and learning in the first cohort of Irish HEIs. The second Educators Programme started in February 2015 self-funded from each HEI's staff training and development budgets.

Staff take an entrepreneurial approach to teaching in all departments, promoting diversity and innovation in teaching and learning.

ACE provided innovative approaches to entrepreneurship education to ensure students from non-business programmes took enterprise related modules. ACE was developed to create the "entrepreneurial graduate", a graduate who was better skilled to meet the changing demands of local industry and small business.

Embedding entrepreneurship within the curriculum represented a departure from existing practices. It required members to engage with new teaching and learning content and new pedagogical approaches. ACE required academic and non-academic staff, from a diverse range of institutions and educational disciplines to work together and embrace new thinking and create new learning environments. Staff had to navigate the often protracted internal programme development processes within their HEIs.

Historic negative attitudes towards entrepreneurship are being overcome. In some schools and centres, there was a clear commitment to continue with entrepreneurship beyond the ACE initiative. A number of barriers to the further embedding of entrepreneurship education were mentioned. These include funding challenges, the desirability or not of associated credits/qualifications for entrepreneurship. There was concern that this would result in the withdrawal of some core subjects in order to create room for enterprise.

A factor contributing to success of the ACE initiative was the extent to which staff embraced and engaged with cross departmental, cross discipline working. Whilst such approaches proved challenging, requiring alignment of departmental procedures, timetables, teaching and assessment practices, the challenges were overcome by a strong commitment to make ACE programmes work.

Particularly successful was the involvement of non-academic staff from Technology Transfer offices and Incubation centres. This informed classroom-based practice and engagement with enterprise. ACE provided a platform for aligning separate parts of the HEI, which had previously not existed: "ACE gave a common place to meet; a bridge between both innovation centre and academics... taking academics beyond the classroom into the wider entrepreneurship ecosystem".

ACE introduced an extensive range of programmes and activities, both academic and non-academic, were introduced across the partner Institutes. New degree and masters programmes were developed on-site at each of the Institutes. An accredited full-programme, with entrepreneurship at its core, was developed taking a modular approach. Modules (Levels 6-9) were incorporated into existing programmes. Non-academic initiatives were also offered at all ACE partners. This ensured that all students were involved in ACE activities during their studies.

The main benefits of offering entrepreneurship education or extra-curricular activities to students were identified as building and developing confidence, gaining transferable skills, broadening career choice perspectives by including viable self-employment, learning about entrepreneurship and networking.

The main challenge identified in almost all partner HEI was timetabling and finding a workable schedule for cross-disciplinary teaching. The greatest enabling factor in each partner was the motivation of staff in general and the ACE team in particular.

The HEI validates entrepreneurship learning outcomes

An evaluation programme was developed to assess the performance of the ACE initiative. This included assessing the extent to which the initiative achieved its specified output targets and capturing the observations and/or learning experiences of samples of key ACE initiatives stakeholders.

Given the range of stakeholders involved, in order to capture the deliverables, targets and outputs, and learning experiences of the various ACE programmes, the evaluation methodology required a mixed method approach. Feedback included semi-structured interviews from samples of senior management and non-academic staff from the five Institutes. In addition a sample of academic staff completed an online questionnaire. The ACE Champions provided reflective logs. Student opinion was surveyed through focus groups and online surveys.

Senior managers saw entrepreneurship as a relatively new discipline within their institutions and felt there are still gaps in its delivery. All the senior manager respondents indicated that entrepreneurship goals formed part of their HEIs' strategic plans and this was enhanced in the newer plans. The specific goals cited included setting up a centre for entrepreneurs, developing entrepreneurship culture, exploiting research output, the setting up of new innovative businesses. There was an understanding of *"we would want all students to have entrepreneurship education as part of their courses"* this was stated by several respondents. There was general agreement that they would like the ACE initiative to continue, as *"It has served a portion of the [...] staff and student population very, very well"*.

Almost two thirds of the respondents indicated that they became involved in the ACE activities for reasons of personal motivation and only one in ten because they were instructed to teach it. Their responses indicated that there was now a higher degree of awareness of entrepreneurship and its importance. They also reported more cross-faculty co-operation with entrepreneurship being taught using an activity-based rather than lecture-based approaches.

The main benefits of offering ACE activities to students were identified as building and developing confidence, gaining transferable skills, broadening career choice perspectives by including viable self-employment and learning about entrepreneurship and networking. Students frequently stated that their ACE experience was very positive as illustrated by this comment: *"Other subjects you do are just learning things off whereas this subject you can take with you when you leave"*. Students acknowledged a greater self-confidence in their ability to start their own ventures. They felt that they had a better appreciation of what is involved in both business and start-up. Teamwork was particularly valued in the context of the cross disciplinary modules. Students learnt from others with a different mindset and from different backgrounds.

By far, the most valued learning experience was the increase in the students' self-confidence and ability to make presentations. Participants in competitions found them creative and innovative. They learnt that creativity and innovation can be improved despite their initial belief that such capabilities are fixed. *"One of the main things that I will take from Semester 6 is the confidence to get up and do presentations"* – students from all five ACE partner HEIs identified that their presentation skills improved considerably.

Feedback from ACE Champions, i.e., designated staff charged with the design and implementation of ACE activities at the partner HEIs, was obtained from reflective logs for the modules and programmes with which they were involved. The feedback showed the experience of ACE as very positive. According to the ACE Champions, students had developed both diverse personal skills e.g. networking, team work, time management, negotiation skills and gained business specific knowledge and skills, including new product development, drawing up a business plan, making practical financial projections and developing a marketing plan.

A sample of members of non-academic staff, mainly affiliated with the incubation centres and the technology transfer offices at the partner HEIs, participated in semi-structured interviews. Almost every respondent was aware of ACE and many had had a role in its implementation. Three quarters of them agreed, or strongly agreed, that the initiative had facilitated a study environment which welcomes, promotes and actively supports entrepreneurship. They felt that the ACE activities had helped to develop the students' entrepreneurial abilities.

While it is acknowledged that transformational change, as intended by ACE, will not be immediate, the senior managers of the partner HEIs felt that a good start has been made (Table 1). The main changes identified were a greater visibility for entrepreneurship, more awareness of the work of the incubation centre and the technology transfer offices and more cross-departmental co-operation.

Although it was suggested that some staff may have a more traditional focus, which does not fully recognise the value of entrepreneurship, such historic negative attitudes towards entrepreneurship are being overcome. In some schools and centres, there is already willingness and clear commitment to continue with the activities and the approach introduced by ACE. Nevertheless a number of barriers to the further embedding of entrepreneurship education were mentioned. These included the funding required and the issue of whether associated credits/qualifications would result in the withdrawal of some core subjects in order to leave room for entrepreneurship. Almost all of the interviewees indicated that the entrepreneurial culture in their HEI had been influenced by ACE. Having dedicated resources to drive entrepreneurship in the HEIs has strengthened the culture, decision making and implementation. The increased choice of programmes and modules was also appreciated by senior management.

Table 1. Key findings from the ACE evaluation exercise

Experience	Enabling Factors	Challenges	Benefits to students
<ul style="list-style-type: none"> • High degree of awareness of the importance of the subject • More cross-faculty co-operation • More activity based/experiential learning • Academic – vs- Practical Setting 	<ul style="list-style-type: none"> • Motivation of staff • Enterprise Champions • Incubation Centres and Technology Transfer Offices • Industry • Entrepreneurial Environment • Role of Student Enterprise Interns 	<ul style="list-style-type: none"> • Timetabling • Cross-Disciplinary Teaching • Dependence upon funding 	<ul style="list-style-type: none"> • Building confidence • Gaining transferable skills • Broadening career choices • Life Skills

Source: ACE evaluation report (2012), interviews by the authors of this case study.

Challenges in the implementation of ACE and how these were overcome

There was strong consensus that ACE's progress in embedding entrepreneurship within the curriculum would not have happened without central government investment. While entrepreneurship had existed within HEIs, particularly within Business Studies, members felt that institution-wide

transformational change would not have been possible with a "business as usual" approach. Government funding provided an important focus for collaborative efforts between and within institutions, as this commentator put it "There were pockets of activity going on but the scale, depth and accessibility of entrepreneurship education would not have happened without substantial investment and this [entrepreneurship education] grew exponentially through ACE". This allowed the release of academics and non-academic staff to develop and deliver programmes within their HEI. It enabled access to expertise and capacity building that could not have been taken from other budgets. Government funding allowed HEIs to experiment with new teaching approaches and programmes. Achieving and sustaining the work of ACE in the absence of ongoing government funding remains a challenge.

The existence of a Management Committee and central Project Team provided a supportive infrastructure for HEI partner leads to drive and shape local delivery. Members benefited from expert advice, peer support, knowledge exchange and direct collaboration.

Leadership support, including Heads of Department and School, was universally deemed instrumental in the success of ACE at both national programme level and within each individual HEI. In practice, leadership supported the entrepreneurial culture and gave the ACE programme credibility within the HEI. This facilitated the introduction of new programmes and modules and made available the resources necessary to support entrepreneurship. There was an attitude of whatever level of support was required, it would be provided, "There was no pressure on staff to do this but there was clear support from the leadership team – anything that was requested was supported".

ACE members reflected on the importance of leadership from the middle and sincere "bottom up, top down" approaches. Often the leadership task was located with those committed to the cause of entrepreneurship education, who in turn secured senior leadership support.

This indicates that change often results from the determination and drive of key individuals. Many members of the ACE Management Committee members fall into this category.

An element of friendly competition spurred on progress within the ACE partner HEIs. Despite the inevitable competition between institutes, members felt that overall the benefits attained from national collaboration far outweighed the associated challenges, as this commentator expressed it: "Visibility of progress within other HEIs provided a valuable yardstick for measuring progress in your own HEI and vital insights into navigating HEI systems and procedures".

ACE members also reflected on the extent to which entrepreneurship education initiatives have been sustained, at both national programme level and within participating HEIs. Members reported that the focus on embedding entrepreneurship education remains strong at both national level and within their HEIs. At national level the establishment of CEEN continues HEIs' commitment to the ACE legacy and to continuing the advance of entrepreneurship education at national level.

At HEI level, partners reported that all academic programmes have been sustained and in most cases further developed and enhanced. Some pilot activities were not sustained across all HEIs, e.g. the Entrepreneur in Residence Scheme, due to costs involved.⁴ Senior management of partner HEIs

⁴ The Entrepreneur in Residence programmes took place in National University of Ireland, Galway (NUIG), Cork Institute of Technology (CIT) and Institute of Technology Sligo (ITS). In NUIG there were Entrepreneurs in Residence in both the Technology Transfer Office and the School of Business. It had been intended to run this in all partner HEIs but funding restrictions resulted in only limited implementation.

did however highlight that while some activities may not have been continued they remain within the ACE/CEEN repertoire and can be revisited at a later stage.

ACE members identified new challenges in further developing HEI level entrepreneurship education programmes, particularly in relation to the issue of staffing capacity. Recent national policy developments have seen increases in contracted teaching hours for IOT staff, reducing their capacity to contribute to developmental work like ACE. Universities also highlight how the requirements for staff to prioritise research and publication outputs limits capacity to focus on developmental teaching and learning activities.

Succession planning was important for all ACE teams and the ACE Management Committee. Following completion of ACE in June 2014, the outgoing ACE Board launched CEEN. CEEN will build on the body of knowledge developed through the ACE programme, taking forward the lessons learnt as well as sustaining key areas of activity. CEEN's mission is to promote excellence in the field by stimulating research, developing new pedagogy, evaluating and disseminating best practice and creating a longitudinal evidence base around "what works".

ACE has redeveloped its website under the new CEEN brand. This is seen as a critical tool for driving forward and supporting the HEI sector develop entrepreneurship education within their organisations. The website will provide access to information and knowledge resources for HEIs and stakeholder groups. The website aims to support stakeholder engagement, and will profile and disseminate resource and reference material through a digital repository.

Lessons learned

ACE was created to be cross-disciplinary and for non-business students, this meant there was a need to co-ordinate timetables, which proved much more complicated than expected. The main challenge identified in almost every partner HEI was timetabling and finding a workable schedule for cross-disciplinary teaching. The greatest enabling factor was the motivation of staff and the enterprise champions.

It was initially easier to work with and gain support from incubators and technology transfer offices, who were positioned outside the curriculum than academic staff. Essentially, what helped the ACE teams in all partner HEIs to spread involvement of staff was, as one commenter put it "*we had evangelical commitment that it was good for students, a belief that this would genuinely help students to fulfil their individual potential*". Tangible student achievement, in this case presentation skills, acts as a great motivator for both students and academic staff. Creating internal enthusiasm made it easier to gain the interest, and involvement of the academic staff essential for the implementation of the project. To increase the demand for the ACE activities amongst the student body students worked alongside staff as "enterprise interns".

External funding can be important, not just as a source of funds, but also as an endorsement that the work is seen as being of greater importance, hence attracting staff attention and commitment. The availability of temporary, project funding, can be used to create sustainable change. This is especially relevant where the change can be brought about through staff development, opening up new approaches or creating links between existing facilities e.g. teaching and technology transfer offices. Activities that require on-going funding, such as the Entrepreneur in Residence Scheme are much more difficult to sustain, as they do not contribute directly to the main outputs of teaching and research.

The process of developing cross-discipline/cross-institution programmes uncovered deeper differences in approaches to programme design than had been expected including, differences in speed of implementation, different priorities in evaluating what makes a "good" course, different attitudes towards team-working versus taking individual initiative.

Fortunately, honesty and openness, between team members, during the implementation phase led to a sense of reduced work stress. The elements of shared pain and frustration built "camaraderie" between individuals which in turn aided team development.

APPENDIX

SUMMARY PRESENTATION OF ACE ACTIVITIES IN THE PARTNER HEIS

Cork Institute of Technology

Contact: Breda Kenny at breda.kenny@cit.ie.

At CIT, ACE was successful in enhancing the entrepreneurial culture of the organisation, opening up CIT to new entrepreneurship education developments and opportunities. Strong links have been forged between academics and the Rubicon (Incubation Centre). ACE directly informed the establishment of the Hincks Centre for Entrepreneurship Excellence. A full time Enterprise Co-ordinator has been appointed who, along with the Student Enterprise Interns, run a range of student engagement activities, including CIT's high profile innovation week. CIT have successfully embedded a comprehensive range of learning opportunities, to support students throughout their early entrepreneurial career. This includes introductory to full research commercialisation modules at PhD level.

Institute of Technology Sligo

Contact: Roisin McGlone at mcglone.roisin@itsligo.ie

IT Sligo has sustained their flagship ACE Module 'Semester 6', which was introduced as a joint module for students in Social Sciences, Creative Design and Performing Arts. System changes have been introduced whereby it is now the norm for educators from other schools and disciplines to collaborate on delivery of this module. Other ongoing initiatives include: the Student Scholarship Scheme, supporting transition of entrepreneurial secondary school students into the HEI; Enterprise Week and the reintroduction of Student Enterprise Interns, who will lead on establishing a Student Enterprise Society.

Dundalk Institute of Technology

Contact: Colman Ledwith at colman.ledwith@dkit.ie

DKIT have sustained their BSc in Engineering Entrepreneurship. DkIT has set itself the objective of embedding entrepreneurship education in every programme, either in existing modules and

programmes or new modules and programmes, including Creative Media. Student Enterprise Interns have been mainstreamed in each School and play a critical role in engaging the student body in non-curriculum activities including the Student Enterprise Society, which runs Enterprise Week and enterprise competitions and workshops. DKIT have also started a cross departmental Entrepreneurship and Enterprise Group, creating an informal space to plan institute wide entrepreneurship education collaboration and strategies.

Dublin City University

Contact: Peter Tiernan at peter.d.tiernan@dcu.ie

DCU has mainstreamed the National Entrepreneurship Educators Programme, which will be run on a fee paying basis in February 2015. A high demand is expected. Introducing a new cross-school module of this nature was a first for DCU and has impacted on every part of the system for programme development, requiring alignment of work flow, timetables and financial management systems. This experience resulted in whole systems changes, with a new collaborative framework for cross school collaboration now established, making such approaches easier in future.

Other ACE members, including Institute of Art, Design and Technology (Therese Moylan on therese.moylan@iadt.ie) and Dublin Institute of Technology (Kathleen Farrell at kathleen.farrell@dit.ie), who were not involved in the original SIF ACE programmes, have become actively involved in the development and delivery of ACE and now CEEN activities. These include the Engaged Student Project and the HETAC Educator Workshops. Both institutions have well established entrepreneurship education programmes as well as non-curricular entrepreneurship activities and their participation has enriched the ACE and now CEEN programme, bringing a broader perspective on entrepreneurship education.