

# Developing Entrepreneurial Graduates

Putting entrepreneurship at the centre of higher education

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### Foreword

When I was at university, in the 1980s, 'business' was very much a dirty word in academic circles. In fact, the main interaction between business and universities came at the careers office – there was little recognition of the value of bringing business and academia together, and even less appreciation of the value of preparing students for careers in business.

I am happy to say that the situation has changed dramatically, although there is still a great deal of work to be done. With the publication of this report, I hope we can give new momentum to entrepreneurship in higher education.

We need, first, to reflect on the importance of entrepreneurial graduates to the United Kingdom and the critical role that Higher Education Institutions (HEIs) play in creating an environment where students can flourish. The UK's competitiveness hinges on our ability to create business-ready graduates with entrepreneurial skills. I also believe that HEIs must embrace business education if they want to appeal to students, offering the entrepreneurship and business courses they increasingly desire.

Above all, we must create new opportunities for students to develop entrepreneurial mindsets, behaviours and skills – abilities that will help them not only to create their own futures, but also to contribute to the UK's economy and to our standing in the world.

There is a role here for everyone. All stakeholders – from Vice-Chancellors to lecturers, careers advisers to entrepreneurs, alumni and all types of organisations – have something to contribute. Although there has been significant progress in the HE sector during the past decade, there is much left to do if we want all students to have the opportunity to access enterprise and entrepreneurship. It is time for us to meet this challenge head-on.

NESTA, NCGE and CIHE understand that it is imperative for our students to develop their entrepreneurial abilities, and I am sure that this report – and particularly its Implementation Framework for Higher Education – will provide valuable and practical guidance for all of us on how we can achieve these vital goals.



**Lord Bilimoria CBE DL**

Founder and Chairman, Cobra Beer

National Champion, National Council for Graduate Entrepreneurship

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## Putting entrepreneurship at the centre of higher education

### Preface

Governments across the globe are seeking to develop entrepreneurial economies where competitiveness and growth can thrive and innovation and creativity can drive new ways to improve the social and economic well-being of their people.

In an environment where high skills lead to high value added, graduates are key to national growth. Inspired, self-confident, talented and enterprising graduates are more likely to found and lead dynamic new ventures and transform any organisation they join or manage.

Developing entrepreneurial graduates is therefore essential to our future success. Universities and other Higher Education Institutions (HEIs) are ideally placed to expose students to environments which foster entrepreneurial mindsets.

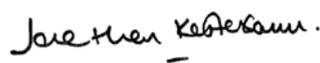
NESTA, NCGE and CIHE have brought together a panel of international experts to share their insights and explore these challenges.

The 'Developing Entrepreneurial Graduates' report offers a framework to help every HEI to create an enabling environment as part of a cross-campus approach. Our report has three main conclusions:

- top-level leadership and ownership of this agenda is required;
- academic faculties and students need to find innovative ways to appropriate entrepreneurship in their subject discipline; and
- it is crucial to involve entrepreneurs and entrepreneurial organisations.

Our three organisations will continue to collaborate, to animate action and to work with universities, business, government and third sector organisations to ensure our graduates are the innovators and creative entrepreneurs of the future.

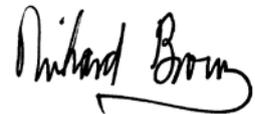
We welcome your views and involvement in this joint endeavour.



**Jonathan Kestenbaum**  
Chief Executive, NESTA



**Ian Robertson**  
Chief Executive, NCGE



**Richard Brown**  
Chief Executive, CIHE

## Acknowledgements

This report was written by: Keith Herrmann, Deputy CEO, CIHE who also co-ordinated the project on behalf of the project team; Professor Paul Hannon, Director of Research and Education, NCGE; Dr Juliet Cox, Research Associate, NESTA; and Philip Ternouth, Associate Director, CIHE. Additional contributions were made by Dr Theresa Crowley, Research Director, NESTA.

NESTA, NCGE and CIHE would like to acknowledge the work of the expert panel and thank them for their contribution to the Developing Entrepreneurial Graduates project: Dr Elizabeth Gatewood, Dr Tony Mendes, Prof. Allan Gibb, Uffe Elbaek, Prof. Daniel Hjorth, David Clews and Ian Ritchie.

Thanks also go to Dr David Good at the Cambridge-MIT Institute for hosting the first panel meeting at King's College, Cambridge and for additional contributions to the panel meetings, and to Mike Carr at BT for hosting the second panel meeting at BT's headquarters in London.



NESTA is the National Endowment for Science, Technology and the Arts. We invest in early-stage companies, inform and shape policy, and deliver practical programmes that inspire others to solve the big challenges of the future.

The National Council for Graduate Entrepreneurship (NCGE) is the UK's national body focusing on enhancing the entrepreneurial capacity of the Higher Education sector. We do this by: supporting long-term cultural change in our universities; shaping the institutional environment to be more conducive to enterprise and entrepreneurship; increasing the level of graduate entrepreneurial activity; and informing national policy and practice.

The Council for Industry and Higher Education (CIHE) is a high-level partnership between leading people from a wide range of businesses, universities and colleges. The Council leads in developing an agreed agenda on the learning issues at higher education level that affect our international competitiveness, social cohesion and individual development.

# Executive summary

1. NCGE (2007) 'Enterprise and Entrepreneurship in Higher Education.' Birmingham: NCGE.

The UK faces the same challenges as those of most developed countries. Rapid social change, a volatile economy and worldwide competition for talented students combine to make these challenges all the more pressing. But these are also opportunities for new ideas. And government has responded with a range of national policies and initiatives aimed at achieving a more competitive economy in which enterprise, entrepreneurship and innovation are the drivers of growth. Graduates with entrepreneurial and innovative mindsets, behaviours and skills are vital to making this happen. Here, the higher education sector, through entrepreneurship education, has a crucial role to play.

But this report shows that entrepreneurship is not for business alone. Addressing the major social challenges of our century requires public bodies and social ventures to recruit graduates with the skills to transform such challenges into opportunities for change.

## **More UK students need to engage in entrepreneurial activity**

Entrepreneurship education is currently taught primarily through modules in business school courses and extra-curricular activities.<sup>1</sup> But UK students need more opportunities to participate in it. At the same time, traditional business school entrepreneurship education needs to change: many students and academics, especially those in non-business disciplines, do not see its narrow focus on business start-up as relevant. HEIs need to enhance the perception and relevance of

entrepreneurship education, so that both students and staff recognise the value of its combination of innovation, creativity, collaboration and risk-taking skills to a wide range of disciplines.

Major structural, cultural and attitudinal barriers are making it hard to embed entrepreneurship education in HEIs. Many Vice-Chancellors believe that they have already introduced it in their institutions; in reality it rarely enjoys the same status as research or the pursuit of academic excellence. This lack of status is in turn compounded by short-term and unreliable funding. Moreover, there are academic tensions between traditional 'instruction' and the experiential learning, action-oriented, mentoring and group project approach needed for effective entrepreneurship education. Often sitting outside formal structures, there is a danger that a lack of clear and coherent objectives will deliver variable outcomes.

## **'Developing Entrepreneurial Graduates' is a call for action**

The report urges universities to institute a systematic overhaul of academic disciplines so that entrepreneurship education is embedded in every subject. We do so in recognition of the fact that graduates need more than academic attainment. To add value, they need to have the entrepreneurial skills that enable them to seize and exploit opportunities, solve issues and problems, generate and communicate ideas, and make a difference in their communities.

Our report offers a framework for delivering entrepreneurship education within HEIs. We draw on our international panel's expertise to develop three guiding themes around which HEIs can create a culture in which to foster and develop entrepreneurial graduates:

- An enabling institutional environment that has clarity of purpose and outcomes, and builds capacity for entrepreneurship education across the whole institution. This has implications for resources, the nature of performance targets, and leadership and educator development; it also requires cultural change at an institutional level.
- Engaging internal and external stakeholders means talking to national, regional and local government, funders and employers, as well as those within HEIs. Stronger relationships between entrepreneurs and university leaders, lecturers and tutors are particularly important if entrepreneurship education is to be rigorously grounded in academic theory, while drawing on the fast-changing realities and practice of commercial and social entrepreneurship.
- Developing entrepreneurial teaching and learning practices demands a shift from transmission models of teaching (learning 'about') to experiential learning (learning 'for') and offers students techniques that can be applied in the real world. Our report calls for learning approaches that incorporate practical examples from outside the university into the classroom, and offer reflective practice, ownership and opportunity to students.

### **Vice-Chancellors can provide visible leadership**

Achieving this requires co-ordinated action on campus – starting from the top. Vice-Chancellors should do more to encourage academics and entrepreneurship educators to work with entrepreneurs and students to overcome any barriers to creating an entrepreneurial culture in our HEIs. They should champion entrepreneurship education across campus and ensure that it becomes a core part of university life. Vice-Chancellors can also encourage leading entrepreneurs to bring new thinking to their HEIs, drawing on the entrepreneurs' life experience, to enliven the theoretical base of entrepreneurship education. Vice-Chancellors need to incentivise and reward those academics who engage in entrepreneurship education. They should use their influence to encourage Research Councils

UK (RCUK) to ensure that entrepreneurial outcomes are given proper recognition in those impact indicators that measure the social and economic value of research and knowledge exchange.

### **Academics are the enablers of change in the curriculum**

The relevance of entrepreneurship education should be increased across a more diverse range of subjects and disciplines. More work is needed to promote this to teaching and learning staff. Here, the NCGE Entrepreneurial Learning Outcomes Framework can help ensure successful evaluation of learning outcomes. Academics can also encourage curricular innovation from other subject disciplines and learn from the Higher Education Academy Subject Centres and the Centres for Excellence in Teaching and Learning (CETLs). As course leaders, tutors and careers advisers, faculty members can encourage students to take up entrepreneurship education opportunities. They can also demonstrate the importance and relevance of the skills it fosters to wider academic achievement.

### **Entrepreneurship educators can enrich students' university experience**

Entrepreneurship education can make a student's experience of higher education richer and more fulfilling; provided educators offer stimulating learning experiences. Students should have the chance to experiment, discover new ways of thinking, and meet successful entrepreneurs. They should be encouraged to explore both theory and practice; building commercial awareness and developing venture creation skills. Entrepreneurship education can both accentuate individual achievement, and provide opportunities for team-work and the development of other 'soft' skills that are so valuable to business and society today.

The university itself offers opportunities to develop these skills, not least through student unions and societies; students can learn from taking up roles in these student bodies. Educators can provide project management and budgeting training, and teach the other professional skills needed to carry out these roles successfully. Such practical roles can help develop an entrepreneurship curriculum that is more focused on hands-on experience rather than theory; one that integrates experience with the taught curriculum.

### **Business and social entrepreneurs must be fully involved**

Strong links with and input from entrepreneurs in all sectors are essential to align university curricula to the needs of employers. Such links will also enable students to learn from those with up-to-date expertise. Doing so will give them the knowledge, experience and abilities to link theory and practice. Entrepreneurs may become Entrepreneurial Fellows, guest lecturers, entrepreneurs-in-residence, mentors, role models or Professors of Practice. They can draw in turn on the expertise of academics by hosting academic placements in their organisations and can contribute to future employee development by providing student placements and offering company projects as case studies.

### **Students should seize the opportunities that entrepreneurial education presents to enable them to prepare for their futures**

Whether they want to build a career in the private, public or third sector, students need opportunities to learn and practise entrepreneurial skills. Positions in student unions, clubs and societies can offer students genuine entrepreneurial experiences that allow for experimentation with new ideas and concepts. They can also be a source of practical problem solving, opportunity spotting, project management, budgeting, communication, team-work, coping with pressure and managing complexity; all of which are skills in demand by employers. HEIs can also offer, through their links with business and alumni bodies, the opportunities to network and build social capital that are part of the essential fabric of a successful entrepreneurial career in any sector.

### **Government can support entrepreneurial education by providing overarching strategic goals**

The UK Government, Welsh Assembly Government, Scottish Government and Northern Ireland Executive's work over the past decade to embed entrepreneurship education in primary, secondary, further and higher education has created a strong foundation to develop an integrated policy framework that covers the entire education spectrum from primary school to university. This would support and develop the growing consensus across Europe that entrepreneurship education must stretch beyond a narrow focus on business start-up; instead by 'fostering entrepreneurial mindsets'<sup>2</sup> it can equip young people with highly transferable and valuable skills with which to build their future roles in the economy and society.

2. European Commission (2008) 'Entrepreneurship in Higher Education, especially in Non-business Studies.' Brussels: European Commission, Directorate-General for Enterprise and Industry.

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## Part 1: Developing Entrepreneurial Graduates – Opportunities and Challenges

3. Department for Innovation, Universities and Skills (2008) 'Innovation Nation.' London: The Stationery Office; Department for Business, Enterprise and Regulatory Reform (2008) 'Enterprise: Unlocking the UK Talent.' London: The Stationery Office.
4. For example, HM Treasury has identified five drivers of productivity as investment, innovation, enterprise, skills and competition, and the UK government has set about investing in, improving and promoting these drivers to advance the UK's economy and society (HM Treasury (2000) 'Productivity in the UK: The Evidence and the Government's Approach.' London: The Stationery Office).
5. Department for Business, Enterprise and Regulatory Reform (2008) op.cit.
6. As outlined in the Leitch Review of Skills (Leitch, S. (2006) 'Leitch Review of Skills: Prosperity for all in the global economy – world class skills.' London: HM Treasury). See Department for Innovation, Universities and Skills (2008) 'World Class Skills: implementing the Leitch Review of Skills in England.' London: The Stationery Office. See Department for Innovation, Universities and Skills (2008) 'Higher Education at Work – High Skills: High Value.' London: The Stationery Office.
7. Department for Innovation, Universities and Skills (2008) 'Innovation Nation.' London: The Stationery Office, Chapter 7; Lord Sainsbury of Turville (2007) 'The Race to the Top: A Review of Government's Science and Innovation Policies.' London: The Stationery Office. See also Smith, H. (2007) 'STEM Review: the Science, Technology, Engineering, Maths Supply Chain.' London: CIHE; Welsh Assembly Government (March 2002) 'Reaching Higher: Higher Education and the Learning Country – A Strategy for the Higher Education sector in Wales.' Cardiff: Welsh Assembly Government; Scottish Government (2004) 'The Competitiveness of Higher Education in Scotland, Phase 3: Summary.' Available at: <http://www.scotland.gov.uk/Resource/Doc/47171/0028787.pdf>.
8. For example, Department for Work and Pensions, Department for Innovation, Universities and Skills and the Cabinet Office Strategy Unit (2008) 'Life Chances: Supporting people to get on in the labour market.' Available at: [http://www.dius.gov.uk/publications/life\\_chances\\_180308.pdf](http://www.dius.gov.uk/publications/life_chances_180308.pdf); and Department for Work and Pensions and Department for Innovation, Universities and Skills (2008) 'Ready for Work, Skilled for Work: Unlocking Britain's talent.' London: The Stationery Office.

We face profound economic and social structural changes – the earlier restructuring of western manufacturing, the shift to service and knowledge-based economies, globalisation, and the rise of emerging economies, along with societal challenges such as environmental sustainability and ageing populations. These necessitate innovative and entrepreneurial responses; not only to deal with such challenges, but to create opportunities from them.<sup>3</sup>

Like other governments, the UK government and the devolved administrations have responded with a range of policies and initiatives aimed at developing a more entrepreneurial economy in which competitiveness and growth thrive and where innovation and creativity drive new ways of enhancing social and economic wellbeing.<sup>4</sup>

### Developing innovative and entrepreneurial individuals as a response to challenges

One policy response has been to develop individual capabilities for entrepreneurship and social innovation. The recent Department for Innovation, Universities and Skills (DIUS) White Paper, 'Innovation Nation', stresses the importance of 'unlocking the talent of all our people' to prosper in today's globalised economy. Equally, the Department for Business, Enterprise and Regulatory Reform (BERR) 'Enterprise Strategy' published in March 2008 clearly demonstrates the importance of enterprise and entrepreneurship to the future of the UK economy.<sup>5</sup> Broad initiatives to develop workforce skills,<sup>6</sup> increase technical skills (often through STEM graduates),<sup>7</sup> promote lifelong learning<sup>8</sup> or encourage entrepreneurship in the creative industries<sup>9</sup> help contribute to this agenda. However, for organisations, businesses and communities

to thrive and succeed, there is a need also for individuals to develop more entrepreneurial and innovative mindsets, behaviours, skills and capacities.<sup>10</sup>

### The role of Higher Education Institutions (HEIs) in developing entrepreneurial individuals

In the context of structural change, government recognition of HEIs as agents of economic and social growth<sup>11</sup> has led to support and extra funding (through initiatives such as the Science and Enterprise Challenge Fund and the Higher Education Innovation Fund) to enable HEIs to increase their engagement with the wider community. Consequently, HEIs have increasingly become more involved in regional economic and social development (through closer business, industry and third sector collaborations,<sup>12</sup> for example) and activities such as the commercialisation of intellectual property.

These initiatives have also emphasised how HEIs can develop entrepreneurial and innovative individuals through entrepreneurship education.<sup>13</sup> Graduates are seen as key to national growth. Inspired, self-confident, talented entrepreneurial graduates are more likely to found and lead dynamic new organisations and social ventures and to have the capacity to transform the organisations they lead and manage. Through entrepreneurship education programmes, HEIs can expose students to environments that foster entrepreneurial mindsets, behaviours and capabilities to deal with an increasingly complex and uncertain world.<sup>14</sup>

## Moving towards the entrepreneurial university

The project partners have addressed entrepreneurship education in their earlier work.<sup>15</sup> In 'Towards the Entrepreneurial University'<sup>16</sup> the NCGE outlined three strategic models for developing the entrepreneurial university: a fully integrated and embedded model; an intermediate model; and an external support model (Appendix A). The report also developed an 'Entrepreneurial Learning Outcomes Framework'<sup>17</sup> (Appendix B) which clarifies what students should learn from entrepreneurial educational experiences and aims to influence curriculum design and delivery in UK HEIs.

## Challenges to developing entrepreneurial environments within HEIs

Further work by the project partners has explored the scope to which the desired entrepreneurial environments and outcomes were evident in UK HEIs. A mapping study<sup>18</sup> of entrepreneurship education in 127 UK universities and higher education institutions found that:

- the average level of student engagement in entrepreneurship education has grown to 11 per cent, but needs to expand more rapidly;
- business schools dominate provision with 61 per cent of all delivery, with limited provision in other departments and faculties;

- more than 80 per cent of extra-curricular entrepreneurship education activity is funded from public money, with strong reliance on short-term funding making such initiatives inherently fragile; and
- fewer than 50 per cent of HEIs display the range of key entrepreneurial characteristics, as suggested in the 'Toward the Entrepreneurial University' report, and need to transform radically the culture of higher education.

The 'Good Practice in Enterprise Development in UK Higher Education' report<sup>19</sup> identified the potential barriers and challenges in creating environments which are highly conducive to developing entrepreneurial and innovative graduates. These challenges include the sustainability of current activity given the fragility of funding mechanisms;<sup>20</sup> low levels of scale and reach of student engagement; and questions about the relevance, consistency, commitment and quality of the experience for students in non-business subject disciplines. Box 1 summarises the main barriers and challenges.

## Developing a new approach to entrepreneurship education

To address these opportunities and challenges, 'Developing Entrepreneurial Graduates' brings together for the first time the work of the National Endowment for Science, Technology

### Box 1: Challenges limiting HEIs' capability to deliver entrepreneurial graduates

- **A complex policy environment** in which funding is short-term, fragile and often focused on projects/events rather than on long-term capacity building and educator development.
- **Varying degrees of 'embedding'** entrepreneurship education across institutions.
- Evidence of **reliance on short-term initiative funding** and **reliance on the enthusiasm of individuals** – both result in this activity being inherently fragile.
- Varying levels of **engagement from business schools**.
- Varying extent to which **formal objectives** have been set for entrepreneurship education and evaluation methods established.
- Many combinations of **different learning and support arrangements** with some variable evidence of effectiveness.
- Focus on **conventional pedagogies** – tension exists between traditional, formal academic teaching methods and assessment and opportunities for 'live' learning in which entrepreneurial practice and experience may be introduced.

9. Department for Culture, Media and Sport (2007) 'Creative Britain: New Talents for a New Economy.' London: The Stationery Office.
10. NESTA (2007) 'Education for Innovation Policy Brief.' London: NESTA.
11. Department for Innovation, Universities and Skills (2008) 'Innovation Nation.' London: The Stationery Office.
12. As recommended by the Lambert Review (Lambert, R. (2003) 'Lambert Review of Business-University Collaboration.' London: HM Treasury). See also Brown, R. and Ternouth, P. (2006) 'International Competitiveness: Businesses Working with Universities.' London: CIHE.
13. The Dearing Report was the first to recommend that universities encourage entrepreneurship through innovative curriculum design and postgraduate programmes. See Dearing, R. (1997) 'The National Committee of Inquiry into Higher Education.' London: NCHE.
14. Gibb argues that HEIs must seek to equip students for a 'life-world' of much greater uncertainty and complexity involving frequent occupational, job and contract status change, global mobility, adaptation to different cultures, working in a world of fluid organisational structures, greater probability of self-employment and wider responsibilities in family and social life (Gibb, A. (2005) 'Towards the Entrepreneurial University.' Policy Paper 3, Birmingham: NCGE. Available at: [http://www.ncge.com/uploads/Exec\\_Summary\\_-\\_AllanGibb.pdf](http://www.ncge.com/uploads/Exec_Summary_-_AllanGibb.pdf). Accessed on 17 August 2008).
15. See NESTA (2007) 'Entrepreneurship Education for the Creative Industries Policy Brief.' London: NESTA; NESTA (2007) 'Five Ways Universities drive Innovation Policy Brief.' London: NESTA; Hague, D. and Holmes C. (2006) 'Oxford Entrepreneurs.' London: CIHE.
16. Gibb op. cit. (2005)
17. Further developed in Gibb, A. (2006) 'Entrepreneurial Learning Outcomes – a benchmark framework.' Birmingham: NCGE.
18. NCGE (2007) 'Enterprise and Entrepreneurship in Higher Education.' Birmingham: NCGE.
19. Botham, R. and Mason, C. (2007) 'Good Practice in Enterprise Development in UK Higher Education.' Birmingham: NCGE, sponsored by NCGE, The Higher Education Academy, CIHE, Enterprise Insight and the DTI Small Business Service.
20. Hannon, P. (2007) Enterprise for all? The Fragility of Enterprise Provision across England's HEIs. 'Journal of Small Business and Enterprise Development.' 14 (2), pp.183-210.

and the Arts (NESTA), the National Council for Graduate Entrepreneurship (NCGE) and the Council for Industry and Higher Education (CIHE) to address the urgent need for HEIs to create a radical new approach to entrepreneurship in tertiary education.

Drawing on our past work – as well as the experiences and recommendations of our expert panel – we outline a new approach to higher education that moves its focus and purpose from transmitting subject knowledge to developing graduates who have the knowledge, skills, motivation and entrepreneurial capacity to address economic and social needs, both in the workplace and in their communities.

### Gaining from an international panel's expertise

To undertake this project, the project partners convened an international panel of experts from the field of entrepreneurship education and practice, outlined below (Appendix C has extended panel member profiles). This panel brought a range of different perspectives and insights to the project process, including technology entrepreneurship, the creative industries, social enterprise and higher education.

- Dr Elizabeth Gatewood – Director, Office of Entrepreneurship and Liberal Arts, Wake Forest University, North Carolina; developing approaches to entrepreneurship in the liberal arts.
- Dr Tony Mendes – Executive Director of the Academy for Entrepreneurial Leadership at the University of Illinois, Urbana-Champaign; entrepreneurial educator who formerly

served as Director of College Initiatives at the Kauffman Foundation.

- Prof. Allan Gibb – Durham University, England; lead consultant to the NCGE on entrepreneurship education, and engaged in the field of entrepreneurship, small business and enterprise development for over 30 years.
- Mr Uffe Elbaek – Founder, KaosPilots, Denmark; developed alternative approaches to higher education and entrepreneurial approaches to learning.
- Prof. Daniel Hjorth – Research Professor, Copenhagen Business School, Denmark; initiator of the Nordic annual workshop on 'Entrepreneurship Learning' (in Stockholm).
- Mr David Clews – Director of the Higher Education Academy for Art, Design and Media; and author of 'Creating Entrepreneurship' (ADM-HEA, 2007), the joint ADM-HEA/NESTA report on entrepreneurship education for the creative industries.
- Mr Ian Ritchie – technology entrepreneur, founder of OWL (a forerunner to the world-wide web), Non-executive Chairman of Iomart plc, Scapa, Computer Applications Service, Caspian Learning and the Interactive Design Institute, Scotland.

The panel members joined the project partners in a series of face-to-face and virtual meetings using an emergent methodology and collaborative approach. The panel was asked to explore the broad range of institutional, cultural and structural issues and challenges

## Box 2: The project adopted a broad approach to entrepreneurship and entrepreneurship education

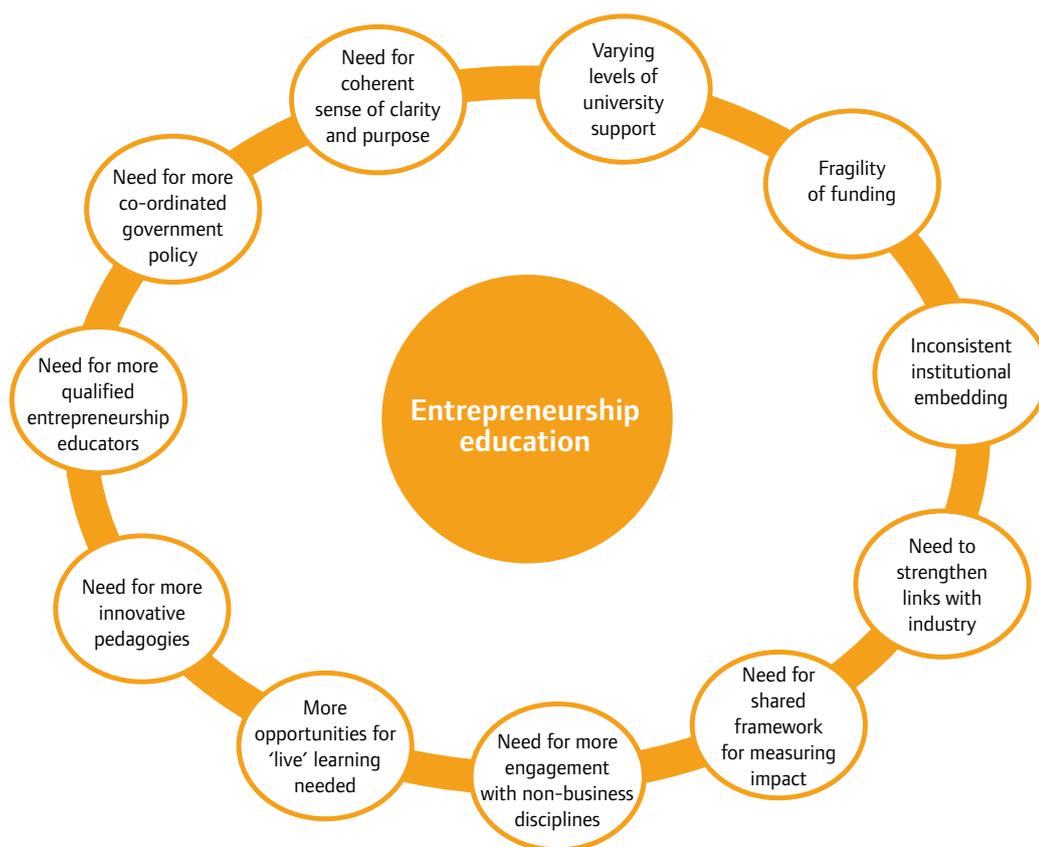
**Entrepreneurship** is not solely about business skills or starting new ventures; it is a way of thinking and behaving relevant to all parts of society and the economy.

**Entrepreneurship education** is a process which develops individuals' *mindsets, behaviours, skills and capabilities and can be applied to create value* in a range of

contexts and environments from the public sector, charities, universities and social enterprises to corporate organisations and new venture start-ups.

Entrepreneurial and enterprising graduates should be equipped to fulfil their potential and to create their own futures.

**Figure 1:** Challenges and opportunities for ‘mainstreaming’ enterprise and entrepreneurship education



(Figure 1) to ‘mainstreaming enterprise and entrepreneurship’ in HEIs. This process enabled us to learn from their insights, experiences and expertise. Parts 2 and 3 include examples and case studies from panel members’ experiences. Thus, a rich diversity of experience and practice has helped shape the Implementation Framework outlined in this report.

The approach taken by the report to entrepreneurship and entrepreneurship education is outlined in Box 2.<sup>21</sup> The report uses the term Higher Education Institutions (HEIs) to refer to universities and other higher education institutions.

**How this report seeks to add value**

This report outlines a framework through which UK HEIs can create the right environments to develop enterprising and entrepreneurial graduates.

Based on the panel members’ expertise, this report aims to build on their experiences – in

addition to the previous work carried out by the project partners – by providing an Implementation Framework for HEIs to help them to create more enabling environments conducive to developing entrepreneurial graduates. In doing so, the report also provides guidance on how to put models of entrepreneurial HEIs into practice and to deliver the desired learning outcomes in the NCGE’s Entrepreneurial Learning Outcomes Framework.

We recognise that this is a challenging endeavour, but this report provides HEIs with the impetus and practical support to embed entrepreneurship at the centre of their activities.

This report is addressed to Vice-Chancellors, academics, entrepreneurship educators,<sup>22</sup> entrepreneurs, students and government. Part 3 outlines a number of actions for key stakeholders emphasising that ‘there is something for everyone to do’ in developing entrepreneurial graduates.

- 21. The report also frames enterprise and entrepreneurship as follows: The enterprise concept... focuses upon the development of the ‘enterprising person and entrepreneurial mindset’. The former constitutes a set of personal skills, attributes, behavioural and motivational capacities which can be used in any context (social, work, leisure etc). The entrepreneurial concept... focuses upon the application of enterprising skills in the context of setting up a new venture, developing/growing an existing venture and designing an entrepreneurial organisation (one in which the capacity for effective use of enterprising skills will be enhanced). Available at: <http://www.ncge.com> [Accessed on 17th August 2008].
- 22. By educators we mean all staff engaged in teaching and supporting learning in entrepreneurship across the institution.

## Part 2: A Higher Education Implementation Framework for Developing Entrepreneurial Graduates

23. Research with students in arts, design and media found that they "...are suspicious of commercial motivations and popular depictions of entrepreneurial activity... they are uncomfortable with popular depictions of entrepreneurship in television programmes such as The Apprentice and Dragons' Den, because they regard them as confrontational, and concerned with commercial gain at the expense of society and the environment." In Art, Design, Media Subject Centre (2007) 'Creating Entrepreneurship: Entrepreneurship Education for the Creative Industries.' Brighton: ADM-HEA, University of Brighton; and HEA and NESTA (2007) 'Creating Entrepreneurship: Entrepreneurship Education for the Creative Industries.' London: HEA and NESTA.

Our report offers an Implementation Framework for making HEIs more conducive to the development of entrepreneurial mindsets, behaviours, skills and opportunities. Here we outline and describe this framework and the key principles that underpin its structure.

The project acknowledged that the traditional business school model of entrepreneurship education and its narrow focus on the 'business plan' is alienating for many non-business students and academic faculty.<sup>23</sup> The co-location of entrepreneurship with technology and business innovation has developed an over-emphasis on this 'business' focus.

The project identified that a strategic shift is needed in our understanding of entrepreneurship today to reposition its role and contribution to the student experience. The project examined how universities interact with business and society and how academic faculties can find innovative ways to appropriate entrepreneurship to their subject disciplines, benefitting teaching and research in the process.

Figure 2 presents an Implementation Framework for Higher Education. It connects a set of underpinning principles to three main themes: Enabling Environments, Engaging Stakeholders and Entrepreneurial Practices. The Framework emphasises the need for an overarching institutional Enabling Environment that is highly conducive to enterprise and entrepreneurship development; within which key stakeholders can effectively support the achievement of desired entrepreneurial outcomes; through the adoption of a set of Entrepreneurial Practices that ensure that students and graduates gain realistic entrepreneurial insights that enable them

to thrive and succeed in the complex, uncertain and ambiguous economic and social environments of the future.

The Implementation Framework should help to configure a more detailed campus-wide strategy for entrepreneurship education. It is underpinned by a set of guiding principles informed by the experiences and views of the international expert panel members:

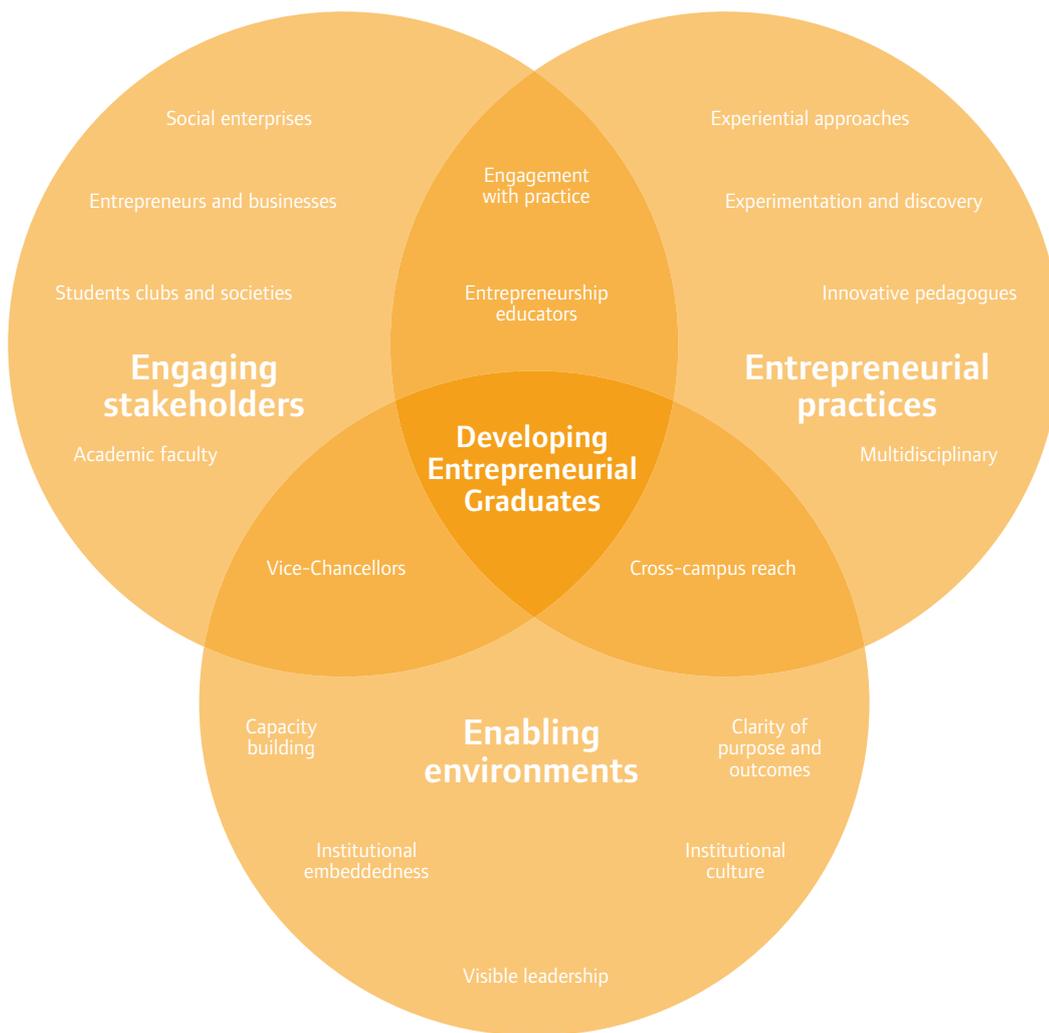
- 1. The need for an enabling institutional environment.**
- 2. The engagement of key stakeholders within and outside the institution.**
- 3. The development of entrepreneurial pedagogic approaches in teaching, learning and support practices.**

### Principle 1: Creating an enabling institutional environment

Universities and other HEIs can provide the right environments for student enterprise and graduate entrepreneurship. Such environments should inspire and motivate individuals to find opportunities, acquire resources and take action in a variety of contexts that have relevance to their lives and aspirations. In such environments, there should be clarity about entrepreneurial outcomes, how these align with appropriate ways of learning, and what learning needs to take place.

- **Clarity of purpose and clarity of outcomes**  
Aligning institutional entrepreneurship goals with clear outcomes and outputs is essential to exploiting the potential

**Figure 2: An Implementation Framework for Higher Education**



impact of individual learning activities and experiences. The creation of an overarching institutional enterprise and entrepreneurship framework can guide strategy and aid impact measurement.

- **Institutional capacity building**  
There is a strong imperative to develop a whole-campus approach, reaching students in all subjects and at all levels of learning and experience.<sup>24</sup> Introducing an enterprise and entrepreneurship strategy will have implications for resources and performance targets. It may also require changes in a university's culture and practices, together with additional leadership and educator development.
- **Institutional reach**  
The activity is relevant and applicable to both students and academics,<sup>25</sup> to research and teaching, and for the relationships

universities have with the local and regional economy. This is needed to situate the experience of entrepreneurship in any subject discipline<sup>26</sup> and place it at the centre of activities. Academics should adopt an entrepreneurial approach to both teaching and curiosity-driven research if students are to learn in an environment which encourages entrepreneurial thinking and behaviour.

### Achieving Enabling Environments

#### Visible leadership from the top

The panel highlighted the strategic and symbolic importance of strong visible leadership in a university. This is vital to transform the understanding and perceptions of those who shape an institution's strategic direction and the environment in which change can be enabled. Here the Vice-Chancellor

- Hulsey, L., Rosenberg, L. and Kim, B. (2006) 'Seeding Entrepreneurship Across Campus – early implementation experiences of the Kauffman Campuses Initiative.' Kansas: Kauffman Foundation; See also Cone, J. (2007) Entrepreneurship on Campus: Why the Real Mission is Cultural Change. In 'Kauffman Thoughtbook' Kansas: Kauffman Foundation, pp.78-86.
- Mendes, A., Kehoe, C. and Dowd, K. (2006) 'Academic Entrepreneurship: Possibilities and Pitfalls.' Academy for Entrepreneurial Leadership, University of Illinois at Urbana-Champaign.
- The Swedish experience shows that entrepreneurship education is embraced by engineering/technical schools, art schools and (but more slowly) by teachers' colleges. Data from 2005 shows that more than 70 Swedish universities provide entrepreneurship courses and programmes; Johannisson, B., Madsén, T., Hjorth, D., Ivarsson, U., and Öien, A. (1997) 'Ds 1997: 3 I Entreprenörskapets Tecken – En Studie av Skolning i Förmåelse.' Stockholm: Fritzes. This is a Swedish Governmental report commissioned by the Department of Trade and Commerce. (English Title: 'In the Sign of Entrepreneurship – A Study of Learning Renewal'.)

and the senior management team are crucial. They must give an explicit demonstration of their strong commitment to entrepreneurship education if others are to take it seriously. This includes due reward and recognition for members of staff who work well in partnership with entrepreneurs, businesses and social enterprises. Institutions can consider:

- a. Demonstrating how adopting a vision and purpose for 'entrepreneurship education' across the campus is crucial to repositioning the role of the university in the economy of the future.
- b. Designing the overall student experience to ensure that graduates are more employable, enterprising and innovative, and are more able to make a social and economic contribution.
- c. Demonstrating the importance of the entrepreneur's real-life experiences,

understanding business and venture creation, and developing graduate entrepreneurial capacities.

### **Institutional embeddedness**

The success of such an enabling environment will depend on the extent to which it is part of the day-to-day operations of the university. Enterprise and entrepreneurship should not be set apart, but established as a core part of 'university life'. Achieving this will be contingent upon a range of factors:

- A shared and integrated institutional framework for enterprise and entrepreneurship.
- Personnel and recruitment policies.
- Faculty-level recognition in career development, performance and rewards of the value of engagement in entrepreneurship

## **Case example 1: Securing high-level leadership – lessons from the Kauffman Foundation**

Now operating across 14 universities in the US, the Foundation has invested \$48 million in its Kauffman Campus Initiative, and more recently also worked with the Burton D. Morgan Foundation to invest in five colleges in Northeast Ohio. This initiative has made a concerted effort to expand entrepreneurship education beyond the business school to the full student body. Securing university commitment to this broad ambition is the single most important criterion that the Kauffman Foundation uses to assign its funding. It also requires universities to:

- involve their president (Vice-Chancellor) personally in the sign-off and presentation of their application to the Kauffman panel;
- provide for cross-campus coverage of entrepreneurship education to make it a common and accessible activity for all students;
- match-fund the Kauffman investment in their university with their own resources;

- provide a model for disseminating the learning from their experiences to other US universities; and
- offer a view on the likelihood that the initiative would change campus culture and produce a sustainable entrepreneurial spirit on campus.

All campus initiatives involve faculty and students from a variety of academic disciplines and take entrepreneurship education beyond the conventional business school model of new business ventures. Some universities have chosen to create minor degree programmes, offer introductory courses for incoming freshmen, expand the role of technology transfer, or build or expand community-based businesses that benefit students and surrounding communities. Some are broadening existing entrepreneurial activities on liberal arts or technology-oriented campuses. Others are focused on developing Hispanic-American or African-American entrepreneurship, and cross-cultural business creation.

**Source:** Kauffman Foundation, 2008. [www.kauffman.org](http://www.kauffman.org)

education, supported by CPD and other staff development and training.

- Greater application of a wide range of pedagogic tools.
- Integrating entrepreneurial learning opportunities and outcomes within core curriculum provision.
- Good connections between teaching, learning, knowledge exchange and support.
- Exploiting opportunities to fund increased access for students and graduates

to experiences of enterprise and entrepreneurship.

### **Broadening the institutional reach of activity**

This report identifies the main institutional stakeholders with a role in the embedding process. Higher Education leaders are in a position to ensure that all staff and academics are fully involved. They can incentivise links with local entrepreneurs, businesses and the community that support enterprise and entrepreneurship learning and development opportunities. Relationships with policy and regulatory institutions also enable students

## **Case example 2: Embedding entrepreneurship education across the campus – lessons from the University of Illinois at Urbana-Champaign**

The Academy for Entrepreneurial Leadership at the University has nine separate initiatives to extend entrepreneurship across the campus.

- The Faculty Fellows programme provides grants of \$15,000 to academics to develop entrepreneurship modules in their subjects (curriculum development). This encourages commitment by faculty to incorporate it into the core curriculum – 40 courses have been developed so far.
- An Entrepreneurship Research Fund provides grants of \$2,000 for research in entrepreneurship and how it is relevant to any subject discipline (available to all 2,000 faculty members on campus).
- The Graduate Scholars programme offers opportunities to graduate students who wish to develop the study of entrepreneurship as a component of their research and teaching portfolio (available to all 10,000 graduate students on campus).
- An Entrepreneurial Opportunity Fund provides awards of up to \$5,000 (open to all faculty and students) for ideas which expand the understanding and appreciation of entrepreneurship on campus.
- The Academy Affiliates programme (available to faculty, university

administrators and leaders across the university) is a network of faculty and community members from diverse disciplines who want to foster the study and growth of entrepreneurship. They are a vital link between the Academy and a diverse array of academic units.

- Entrepreneurship Lectures and co-sponsored events provide opportunities to collaborate with numerous research centres and academic units on campus.
- Student Registered organisations in entrepreneurship – the Academy currently provides financial support and advice to five student organisations.
- Scholars in Residence programme (involving three scholars selected by the Academy from various disciplines and rotated annually) hosts 'real' entrepreneurs to share their experiences with students and academic faculty.
- Research Support Services (available to all faculty and departments) and community outreach and engagement programmes (including internships with local entrepreneurial companies, workshops, consulting and grant programmes for high growth entrepreneurial firms).

**Source:** Dr Tony Mendes, Academy for Entrepreneurial Leadership, 2008.  
[www.business.uiuc.edu/ael/](http://www.business.uiuc.edu/ael/)

to understand the context within which entrepreneurship is developed. This also extends to the university's wider responsibility to its students; how does the institution ensure that its students are prepared for the future world, one they need to and will help create? How does the careers service support student placements in entrepreneurial organisations and team-based project work with local companies and social enterprises?

## Principle 2: Engaging stakeholders inside and outside the university

Entrepreneurship does not take place in isolation from its broader environment; continuous learning is sustained through relationships with stakeholders and others. Indeed, successful entrepreneurship is more likely where stakeholder relationships provide learning opportunities and facilitate the creation and exchange of tacit knowledge.

- **Stakeholder engagement**

It is important to involve as many stakeholders as possible in the provision of entrepreneurship education. Their diverse voices are reflected in this report. Acquiring shared ownership of the inputs, processes and outcomes from entrepreneurship education is likely to enhance the overall impact of institutional activities.

- **Stakeholders inside and outside HE**

The stakeholder community can include: university leadership and administrators; students and alumni; academic faculty and staff; entrepreneurship educators and support; local entrepreneurs; funders of all types; small and large businesses in the private and public sectors; government; and regional, national and international organisations.

- **Valuing an international perspective**

The contribution of internal and external stakeholders can enrich the learning environment. In an entrepreneurial context, this extends to recognising the value in learning across cultures and academic disciplines. Hence for students these experiences should accommodate an international dimension.<sup>27</sup> Exposure to entrepreneurship in an international setting helps students develop their global awareness.

## Approaches to engaging stakeholders

The stakeholder community for entrepreneurship education is broad and diverse. HEIs need to consider developing coherent and connected strategies in order to engage stakeholders around a shared vision for entrepreneurship education, both internally and externally.

### Engaging internal stakeholders

The drivers for academic success are in themselves changing and thus requiring an entrepreneurial response from academic departments. This has engendered a shift in organisational culture through an increasing focus on external income generation; demonstrating economic and social impact; the international competition for securing research funding; recruiting students; and achieving academic excellence internationally.

To encourage greater engagement in entrepreneurial activity across academic departments, it is important that HEIs raise its status by recognising and rewarding those that are successful in engaging stakeholders to exploit new entrepreneurial opportunities. HEIs need to review how best to equip staff to effectively work with stakeholders outside of the institution.

Dedicated entrepreneurship educators often have less status and prestige than academics who contribute more to the Research Assessment Exercise.<sup>28</sup> This is particularly true in knowledge-driven disciplines. In order to develop more integrated approaches HEIs need to consider how to address this issue. We can learn from entrepreneurship education in the creative industries where practice is considered as important as research.

Raising the relevance and profile of entrepreneurship across all academic departments requires it to be placed at the heart of all university practices. Academic entrepreneurs can also serve as influential role models and provide useful ways to demonstrate the relevance of entrepreneurial action in different subject areas through international examples of inspiring practice.

As the Government's desire for more meaningful links with business grows, HEIs may begin to change their staff recruitment and reward mechanisms. There are examples in the UK of a reward and promotion strategy that deliberately rewards excellence in teaching,

27. Brown, R. Barnes, J. and Archer, W. (2008 forthcoming) 'Global Horizons and the Role of Employers.' London: CIHE.

28. The Higher Education Funding Council for England (HEFCE) is working to develop new arrangements for the assessment and funding of research. The new arrangements – the Research Excellence Framework (REF) – will be introduced after the 2008 Research Assessment Exercise (RAE).

research and stakeholder engagement (work with businesses and the local community).

### Exploiting academic links with industry

There is a growing emphasis on the need for improved links between business and academia. These are important not only for the organisations involved, but also for developing knowledge exchange and for deepening the absorptive capacity of local and regional economies by attracting and retaining entrepreneurial graduates from the UK and overseas.<sup>29</sup>

Academic links with industry come in many forms: using university research to develop solutions to industry-specific problems; research contracts; business relationship management; student placements; and spin-outs and licensing of university technology. These are vital for ensuring that the curriculum is linked with industry. The approach found in creative industries education, which links curriculum development and the student experience through ongoing engagement with business (a relationship-based approach), shows how this can work well. This approach provides both the student and the academic with 'real' exposure to creative companies,

ensuring that the learning of a craft or skill is directly related to its application. In doing so, it weaves a seamless interface between theory (academic curriculum) and practice (entrepreneurial action).<sup>30</sup>

### Engaging with and supporting alumni

Links with business and the community also extend to alumni. At Wake Forest University, North Carolina, the Office for Entrepreneurship and Liberal Arts actively engages entrepreneurial alumni who are also parents of students attending the university. The Office involves parents and alumni on advisory panels to put pressure on the university to support the entrepreneurship programme. Using entrepreneurial alumni from particular subject disciplines as role models and guest lecturers can also help to demonstrate the relevance of entrepreneurship in any subject discipline.

In 2008, NCGE published the results of a commissioned analysis of *The Sunday Times* 'Top 100' listings for Fast Growth (Fast Track) and Technology Companies (Tech Track). The findings provide clear evidence of the contributions that graduates are making to our most innovative and dynamic young UK companies:<sup>31</sup>

29. NESTA (2007) op. cit. See also Abreu, M., Grinevich, V., Hughes, A. and Ternouth, P. (2008 forthcoming) 'University-Business Links in the UK: Boundary Spanning, Gatekeepers and the Process of Knowledge Exchange.' London: CIHE.

30. This is the ideal scenario, but the research from 'Creating Entrepreneurship' (ADM-HEA, 2007) has shown that this perspective has its flaws. New research that ADM is undertaking for the Department for Culture, Media and Sport (DCMS) is currently examining this issue and will make recommendations on how to improve these engagements with industry.

31. NCGE (2007) 'Analysis of Founders of the UK's Fastest Growing Private Companies.' Birmingham: NCGE. Available at: <http://www.ncge.com/files/40.pdf> [Accessed on 17th August 2008].

## Case example 3: Prospecting for entrepreneurial outcomes – lessons from the University of Edinburgh

In Scotland, knowledge exchange schemes are designed to change university behaviour by rewarding business-university collaboration and generating enterprising outcomes. The Prospekt Partnership at the University of Edinburgh aims to boost activities in knowledge exchange, entrepreneurship and public outreach with:

- a dedicated commercialisation team who proactively engage with industry;
- a hub for informatics teaching, commercialising advanced and applied computing research and industry collaboration;
- programmes and activities to encourage entrepreneurship and resultant new venture businesses; and

- a platform for the international promotion of the School of Informatics and leverage of its global alumni network.

These state-of-the-art enterprise facilities provide a hub for researchers, students, entrepreneurs and investors to stimulate breakthrough research, generate industrial applications and add value to the Scottish economy. The University of Edinburgh's School of Informatics is considered one of Scotland's national assets and one of the top five locations in the world for computing science and information-related research.

**Source:** Ian Ritchie, taken from University of Edinburgh, Informatics News, 23rd June 2006. [www.inf.ed.ac.uk/](http://www.inf.ed.ac.uk/)

## Case example 4: Finding early adopters – lessons from Wake Forest University, North Carolina

- At Wake Forest University a focus on winning over prominent members of faculty in key departments ensured there was early leadership in the field. Using such leaders to support the entrepreneurship agenda and lend credibility was crucial to embedding entrepreneurship education more broadly. Encouraging early adopters helped to pull through demand.
- To engage students, the focus is on providing different types of learning experience outside the classroom to attract their attention. The courses are framed around innovative problem-solving (not new venture creation) using projects and group work.
- Seed grants are available, especially for supporting internships which provide students with an opportunity to scope out and explore an ‘open challenge’ on

any ‘entrepreneurial or creative’ issue through a year of independent study.

- The Office of Entrepreneurship and Liberal Arts uses an advisory council of parents and alumni to create relevance in the learning experience, build links with business and put pressure on the university to respond to parents and alumni as stakeholders supporting the entrepreneurship programme.
- First year (fresher) seminars provide an out-of-curriculum experience of entrepreneurship. This provides a way of getting students ‘hooked’ early on in their university lives. Second and third year modules are also offered to provide progression in the learning experience.

**Source:** Dr Elizabeth Gatewood, Office of Entrepreneurship and Liberal Arts, 2008. [www.entrepreneurship.wfu.edu/](http://www.entrepreneurship.wfu.edu/)

32. Fiet, J. (2001) The Pedagogical Side of Entrepreneurship Theory. *Journal of Business Venturing*, 16 (2), pp.101-117.
33. Sarasvathy, S. (2007) ‘What makes Entrepreneurs Entrepreneurial?’ Charlottesville: Darden Graduate School of Business, University of Virginia.

*“University graduates founded/managed 70 per cent of all fast growth companies and 84 per cent of the top technology companies. These companies had grown their total sales revenues from £950 million to £4.3 billion in the 3 years to 2006/07 with an average annual sales growth rate of 111 per cent and employing some 38,000 people.”*

Often graduates seek to start up an entrepreneurial venture when they are around 30. Universities should do more to help alumni with their entrepreneurial ambitions by offering support or providing access to opportunities, venture capital, business planning and risk assessment, market research, and management development training. Alumni could also become entrepreneurial role models to inspire students and HEIs could engage with them to generate endowment funds.

Recent graduates often cite lack of experience and self-confidence as barriers to engaging in an entrepreneurial opportunity. Universities can support the development of personal confidence and provide relevant exposure to

experienced entrepreneurs to reduce these barriers.

Overall, UK universities should be encouraged to adopt a broad-based whole-campus approach that creates an enabling institutional environment which attracts entrepreneurial people and supports the application of innovative learning practices.

### Principle 3: Developing entrepreneurial teaching and learning practices

The delivery of the desired entrepreneurial outcomes challenges HEIs and educators to review and reflect on what needs to be taught and learnt and how the appropriate learning environments and approaches can be created.<sup>32</sup> Such practices should be clearly aligned with existing goals, outcomes and assessment processes.

- **Learning environments and pedagogies**  
The development of learners’ entrepreneurial capacities<sup>33</sup> involves developing their

mindsets, attitudes, belief systems,<sup>34</sup> self-efficacy, emotions and personal values as much as their technical knowledge and skills. This is particularly important if the goal is to increase entrepreneurial propensity and not just personal desirability or feasibility. It is about translating 'I want to' and 'I can' into 'I will' and 'I am'. Achieving this transformation requires a learning model that emphasises experience, action and reflective practices, and offers ownership and opportunity to the learner.<sup>35</sup> The application of a wide range of innovative pedagogies ensures that every type of learner can engage meaningfully.<sup>36</sup>

### • Embedding the 'entrepreneurial life-world'

Increasing graduates' capacity for entrepreneurial action requires building their self-confidence and self-efficacy.<sup>37</sup> Exposure to entrepreneurial people, organisations and environments is essential. The entrepreneurial learning opportunity needs therefore to embed experiences that enable learners to experience entrepreneurial ways of thinking, behaving and acting, and to be responsible for their own actions and future through personal discovery, performance, experimentation and learning from failure.

### Developing entrepreneurial teaching and learning

There is a clear need to shift from transmission models of teaching (learning 'about') to experiential learning (learning 'for'), where students can learn entrepreneurial techniques that can be applied in a broad range of settings. Experience is crucial for understanding and embedding entrepreneurial concepts and can be delivered through innovative pedagogies that challenge students, encourage input from outside the university and bring 'real world' experience into the classroom or laboratory.

### Developing engaging learning practices

It is important that students experience learning practices that are relevant for achieving the desired entrepreneurial outcomes. Experience from Sweden, Denmark, the US and the UK shows that educators need to have the freedom to frame student learning opportunities in a number of ways:

- Typically, the 'entrepreneurial life-world' resonates with students in disciplines where the learning is practice-based. Pedagogic practices include high levels of learning-through-doing, problem creation and solving, and project-centred learning that

often simulates 'real-world' situations. Hence educators should incorporate experimentation, discovery, practice, reflection on theory, and opportunities for students to learn from each other, into their practices.

- Use multi-disciplinary approaches which involve students and academics from a range of departments – bringing different forms of knowledge and perspectives to the learning process.
- Ensure flexibility so that the diffusion of learning allows students to reconfigure their knowledge, juxtapose different approaches, be adventurous, be playful and adopt self-directed styles of learning.
- Situate or contextualise entrepreneurship around innovation, creativity, collaboration and problem solving, rather than focusing solely on new venture creation.
- Develop practical mechanisms to embed a broad experience of entrepreneurship that includes understanding business and social enterprise and the new venture creation process. However, this should extend to cover learning how to recognise opportunities, take risks, think strategically, work flexibly, develop resilience, manage complexity, cope with loneliness and acquire the more generic employability skills needed for the workplace (team-working, communication skills, commercial awareness and problem creation and solving).

A project or practice-based learning process, rather than one that is theoretical, makes learning relevant to a range of applications. This also requires a language for entrepreneurship in HE that recognises its importance in contexts beyond business;<sup>38</sup> there is much to learn from education in arts, drama, design and media.

Immersion in practice places the practitioner at the centre of the learning experience. The use of drama and performance techniques is an essential part of the entrepreneurial learning process as many entrepreneurs are continually 'acting' and 'performing' in their many roles. Hence practitioners are fully recognised for their contribution and are highly valued by academics.<sup>39</sup>

The 'Creating Entrepreneurship' report<sup>40</sup> provides an excellent overview of education models and approaches which place

34. Elbaek, U. (2006) 'KaosPilots A-Z.' Aarhus: KaosCommunication.
35. Hjorth, D. and Johannisson, B. (2007) Learning as an Entrepreneurial Process. In Fayolle, A. (ed.) 'Handbook of Research in Entrepreneurship Education.' Cheltenham: Edward Elgar.
36. NCGE through its development of the International Entrepreneurship Educators Programme has produced a series of 'Pedagogic Briefing Notes' for enterprise and entrepreneurship educators. A Compendium of over 50 pedagogies will be published in 2008/09.
37. Cooper, S. and Lucas, W. (2007) Enhancing Self-Efficacy for Entrepreneurship and Innovation. In Good, D., Greenwald, S., Cox, R. and Goldman, M. (eds.) 'University Collaboration for Innovation: Lessons from the Cambridge-MIT Institute.' Rotterdam: Sense Publishers. This work used Bandura's model of self-efficacy to test if entrepreneurship education enhanced self-confidence and entrepreneurial intent. For more on Bandura's work on self-efficacy, see Bandura, A. (1997) 'Self-efficacy: The Exercise of Control.' New York: Freeman.
38. Hjorth, D. and Johannisson, B. (1997) Training for Entrepreneurship: Playing and Language Games. 'In IntEnt97, conference proceedings, Monterey Bay, 1997.' Aldershot: Ashgate Publishers
39. The Work Foundation (2007) 'Staying Ahead: the Economic Performance of the UK's Creative Industries.' London: The Work Foundation; ADM-HEA (2007) op. cit.

## Case example 5: Learning as an entrepreneurial process – lessons from the Universities of Stockholm and Malmö

At the Universities of Stockholm and Malmö, a Masters Programme in entrepreneurship is offered to students from diverse fields such as fine arts, medicine, engineering, biology and business.

- The programme invites students to approach entrepreneurship as part of society rather than simply part of business – it is framed as a way of existence.
- Enabling students to learn from each other is a central part of the programme.
- Students work with businesses on a real-life development project. This allows

them to learn ‘in’ entrepreneurship and creating knowledge ‘for’ as well as ‘about’ entrepreneurship.

- Student projects focus on: (1) life-images of entrepreneurship – entrepreneurs visit the programme and tell stories; students write a report reflecting upon their learning from these ‘live cases’; (2) an entrepreneurial project – students can choose from: engaging in an entrepreneurial venture, developing their own business plan, or investigating a topic from an entrepreneurial perspective.

**Source:** Professor Daniel Hjorth and Professor Bengt Johansson, 2006. [www.cbs.dk](http://www.cbs.dk)

40. ADM-HEA (2007) op. cit.

41. For further work on this see: European Commission (2008) ‘Entrepreneurship in Higher Education, especially in Non-business Studies.’ Brussels: European Commission, Directorate-General for Enterprise and Industry; Botham, R. and Mason, C. (2007) op. cit. The NCGE has developed a series of ‘Pedagogic Briefing Notes (see footnote above).

42. Lucas, W. (2007) ‘Enhancing the Value of Work Experience for the Student and the Company.’ In conference proceedings EDHEE (Education and High Growth Innovation) workshop, Kings College, Cambridge-MIT Initiative.

43. The ‘SPEED’ Project in the UK is run by a consortium of UK universities and provides student funding for creating and running a company for one year.

44. Cooper, S. and Lucas, W. (2007) op. cit.

entrepreneurial learning at the intersection between theory and practice (see Case example 6).

### Embedding pedagogic approaches that work in practice

There are many examples of good practice, though it is not possible to present them all in this report.<sup>41</sup> The biggest challenge is not in developing more good practice, but in embedding the breadth of entrepreneurship education pedagogies across the diversity of student learning experiences. Two important points emphasised by our panel members are however outlined here:

#### • Using student placements to enhance the learning

Opportunities for practice can be provided by making student placements and other forms of business engagement part of the curriculum. These activities can (a) enhance the student learning experience; (b) provide universities with a vehicle to build links with business; and (c) over time build communities of practice that involve outside organisations, academics, students and the institution. Students can also bring new thinking and ideas to an organisation they work with on a project or placement. But it is crucial that student placements help deliver relevant learning outcomes, and that

businesses or organisations taking students work with academics to ensure that these activities make a helpful contribution to the learning process; otherwise, they can be particularly damaging.<sup>42</sup> Student placements can also offer opportunities for new venture creation and provide students with ‘real’ entrepreneurial experiences.<sup>43</sup>

#### • Enhancing self-directed learning

International experience also shows that the success of student engagement with learning for entrepreneurship depends on students’ level of ambition and commitment: their desire for self-development and self-directed learning and levels of self-efficacy.<sup>44</sup> To a large degree, entrepreneurship is centred on the individual – hence the importance of students seeing their entrepreneurial experience develop in line with their aspirations. Entrepreneurship education may be relevant across all subject disciplines but these guidelines also recognise that this is not an activity for all.

## Case example 6: HEA-ADM emerging models – lessons from entrepreneurship education in the creative industries

One model emerging from the HEA-ADM research suggests the following key elements for delivering robust entrepreneurship education for the creative industries:

- A free-standing subject-focused module or components for entrepreneurship education aimed at delivering knowledge and skills for and about entrepreneurship.
- The learning within these courses is part of the core curriculum. Learning outcomes are developed in practice-based modules.
- Entrepreneurial behaviours, attributes and skills are developed through direct engagement with industry. The form of engagement is wide ranging and may include work placements, contributions to curriculum delivery and assessment and industry-based assignments by creative industries professionals and other specialists.
- Pedagogies that support deep learning approaches by focusing on situated and project-based learning and have high currency for art, design and media students.

**Source:** David Clews, taken from ADM-HEA (2007). [www.adm.heacademy.ac.uk/](http://www.adm.heacademy.ac.uk/)

### Enabling Environments, Stakeholders and Entrepreneurial Practices: a framework for developing more entrepreneurial graduates

Our framework has been underpinned by a number of key principles which have been brought together under three themes: the Enabling Environment; Engaging Stakeholders; and Entrepreneurial Practices. These can contribute to strategic and collective action in HEIs to enhance opportunities for entrepreneurial graduates, and to initiate an institutional step-change and movement towards creating a more entrepreneurial culture.<sup>45</sup> Institutions that are committed to contributing to the development of entrepreneurial graduates demonstrate the approaches, practices and vision outlined in this report. They may be described as being imbued with an 'entrepreneurial spirit'.<sup>46</sup>

However it is clear that this alone is insufficient.<sup>47</sup> We need clear metrics and impact measures to assess this entrepreneurial contribution and its effects on students and graduates, staff and the institution, on the local community and on economic and social development.

45. Cherwitz, R. (2005) Creating a Culture of Intellectual Entrepreneurship. 'Academe.' 91 (4), July/August.
46. Gibb, A. and Hannon, P. (2006) Towards the Entrepreneurial University. 'International Journal of Entrepreneurship Education.' 4, pp.73-110. See also the criteria for the NCGE-sponsored THE 'Entrepreneurial University of the Year' Award which includes: the institutional environment – leadership and culture; student engagement – application and attitude; innovative staff – curricula design and pedagogies; impact – entrepreneurial outcomes.
47. Clark, B. (2004) 'Sustaining Change in Universities' Society for Research into Higher Education.' London: Open University Press.

## Part 3: A Call for Co-ordinated Action by All Stakeholders

Our project has demonstrated the importance of internal and external stakeholder engagement to the successful and effective development of entrepreneurial graduates. Internally, institutional leaders, faculty staff, educators and student organisations should connect with careers and employability support teams, incubators and knowledge transfer offices. Externally, the meaningful engagement of policymakers, alumni, local entrepreneurs, funders and private and public sector organisations (large and small) can help to shape entrepreneurship education strategy and practice and create entrepreneurial opportunity and experiences for students and staff.

Understanding the aspirations and needs of key stakeholders provides the potential for coalescing interests, pooling resources and addressing strategic challenges through sustainable partnerships. The international panel emphasised the importance of stakeholders taking collective and co-ordinated action. Figure 3 outlines the typical stakeholder landscape surrounding any such university or HEI.

### **Recommendations for key stakeholder actions**

The Implementation Framework presented in this report has a strong stakeholder focus. Its purpose is to guide all stakeholders in creating the Enabling Environments that are conducive to developing entrepreneurial graduates. Successful implementation demands commitment and action from key stakeholder groups, including those identified in Figure 3. Our international panel has highlighted a number of stakeholder actions that should

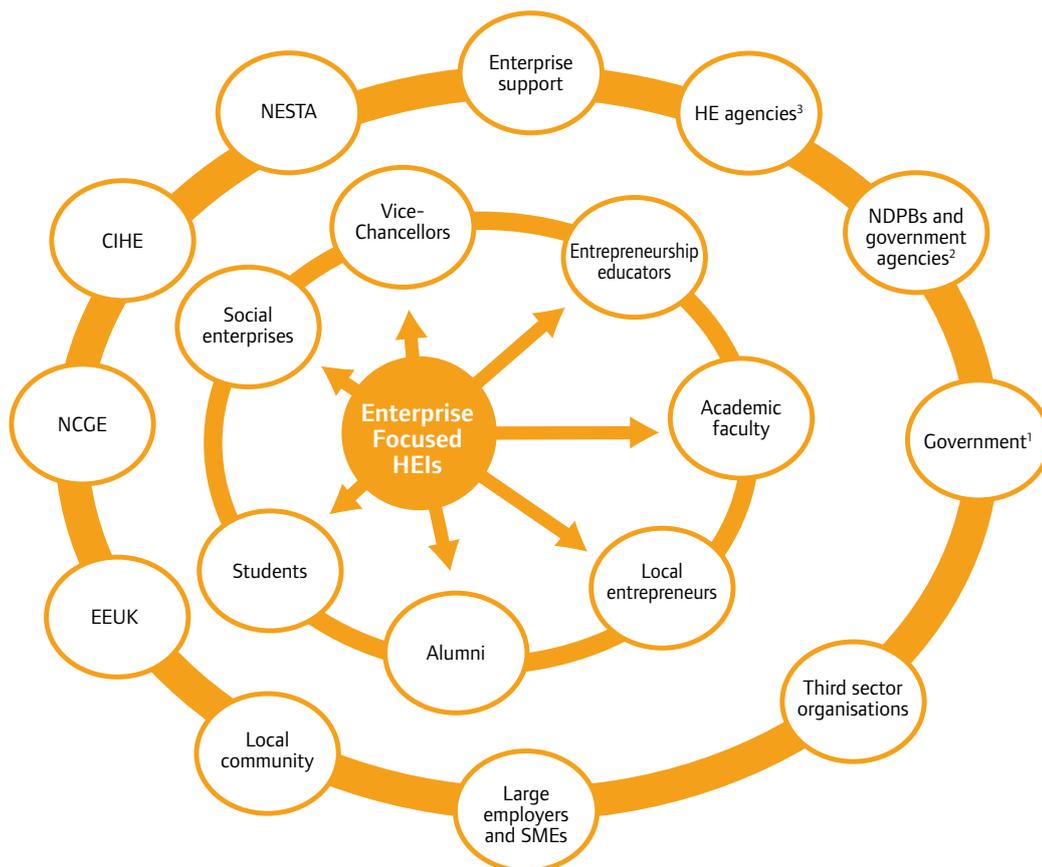
help deliver desirable outcomes. These actions would ensure a campus-wide approach to implementing the Framework.

The Priority Actions identified below are not meant to be prescriptive. They provide examples of Entrepreneurial Practice from across the globe.

### **Vice-Chancellors**

- Champion enterprise and entrepreneurship education with a vision, purpose and strategy that supports a cross-campus opportunity available to all students and academic faculty and that delivers clear entrepreneurial outcomes both inside and outside the university.
- Encourage a more co-ordinated approach that ties in student societies, the careers service, student placement schemes, senior management, all academic faculties, science parks, incubators and other knowledge exchange activities.
- Lead changes to quality assurance (QA) protocols to facilitate company projects and other forms of engagement.
- Invest in staff development that enhances professional capability in enterprise and entrepreneurship education, not least in their application of a wider base of pedagogic tools. This should also inform the development of assessment systems that motivate and develop more entrepreneurial graduates.

**Figure 3:** The typical stakeholder landscape for entrepreneurship in Higher Education



48. Abreu, M. et al. (2008 forthcoming) op. cit.

1. HM Treasury  
DIUS  
BERR

DCSF  
DCMS  
RDAs

Scottish Government  
Welsh Assembly Government  
Northern Ireland Executive

2. Funding Councils  
RCUK  
TSB  
UKTI

3. HEA  
CETLs  
QAA  
AURIL  
UNICO

**Key:**

HM Treasury - Her Majesty's Treasury

DIUS - Department for Innovation, Universities & Skills

BERR - Department for Business, Enterprise & Regulatory Reform

DCSF - Department for Children, Schools and Families

DCMS - Department for Culture, Media and Sport

RDAs - Regional Development Agencies

RCUK - Research Councils UK

TSB - Technology Strategy Board

UKTI - UK Trade and Investment

NDPB - Non-departmental public body

HEA - Higher Education Academy

CETLs - Centres for Excellence in Teaching and Learning

QAA - Qualifications Assurance Agency

AURIL - Association of University Research and Industry Links

UNICO - The University Companies Association

CIHE - Council for Industry and Higher Education

NESTA - National Endowment for Science, Technology and the Arts

NCGE - National Council for Graduate Entrepreneurship

EEUK - Enterprise Educators UK

- Make bold changes to reward and remuneration frameworks to recognise the entrepreneurial behaviour of academics and practitioners who work with entrepreneurial organisations in business and the community. The spillovers from the co-creation of new knowledge and practices<sup>48</sup> generated from these interactions and relationships should permeate the learning environment and improve the student experience. This may encourage greater interaction between

academics, entrepreneurial organisations and students, thereby strengthening the nexus between theory, concept and practice.

- Give entrepreneurs status in universities – as academic adjuncts, visiting Entrepreneurial Fellows, entrepreneurs-in-residence or Professors of Practice.
- Work to influence the Research Councils UK (RCUK) to change their impact indicators

for measuring the social and economic value of research so that they recognise entrepreneurial outcomes.

### Academic faculty

- Show how entrepreneurship education is relevant across diverse subjects and disciplines, and promote it to teaching staff.
- Leverage links with business, entrepreneurial alumni and social enterprises that can help to demonstrate the relevance of entrepreneurship in any subject discipline.
- Leverage business involvement from research, knowledge exchange and the exploitation of intellectual property (IP) to demonstrate the connectedness between the worlds of entrepreneurship and higher education.
- Encourage and recruit the 'next generation' of entrepreneurship educators, provide opportunities for students to learn from each other and provide more entrepreneurship training for educators in both business and non-business disciplines. Find ways to

engage<sup>49</sup> and animate academic colleagues, and create a vibrant and active network of entrepreneur educators across campuses and institutions.

- Use the NCGE's Entrepreneurial Learning Outcomes Framework to ensure that the teaching and learning environment achieves the outcomes suggested in Appendix B.
- Learn from the Higher Education Academy Subject Centres<sup>50</sup> and the Centres for Excellence in Teaching and Learning<sup>51</sup> (CETLs) to encourage curricular innovation from other subject disciplines.

### Entrepreneurship educators

- Encourage curricular design that can introduce entrepreneurship into any subject discipline. Collaboration across different faculties is essential for helping academics appropriate their understanding and application of entrepreneurship in their subject discipline.
- Support learning approaches that accentuate individual pursuit of achievement while

49. Mendes, A. (2004) 'The Academy Needs Assessment Survey: Findings and Implications.' Urbana-Champaign: Academy for Entrepreneurial Leadership, University of Illinois at Urbana-Champaign.

50. See [www.heacademy.ac.uk](http://www.heacademy.ac.uk)

51. See [www.hefce.ac.uk/learning/TInits/cetl/](http://www.hefce.ac.uk/learning/TInits/cetl/)

## Case example 7: Empowering educators – lessons from the Entrepreneurship Affiliates Programme, University of Illinois, Urbana-Champaign

The Entrepreneurship Affiliates Programme is a network of like-minded entrepreneurial educators, faculty and administrators.

- This network binds educators across the campus and engages them in numerous activities throughout the year, ending in an annual celebration dinner.
- Members of this affiliate network feel empowered to suggest changes in their departments that will expand entrepreneurial concepts and practices.
- The university Provost also convened an 'entrepreneurship at Illinois' panel, charged with designing comprehensive strategies that will result in Illinois being a truly 'entrepreneurial university'.

- The rewards are not only monetary; they include substantial recognition where collaboration is rewarded through the Vice-Chancellor's Innovation and Entrepreneurship Awards Scheme to celebrate and recognise academic achievement in entrepreneurship education. Started with six entrants from over 2,500 academic staff, there are now so many applicants the Academy can only consider one in three applicants for entry to the programme.

**Source:** Dr Tony Mendes, Academy for Entrepreneurial Leadership, 2008.  
[www.business.uiuc.edu/ael](http://www.business.uiuc.edu/ael)

allowing sufficient attention to team-work and other 'soft' skills.

- Create opportunities within the formal curriculum for practical experience and reflection. This may require considerable change to the QA systems, the methods of teaching and assessment and a more balanced approach to taught and non-taught curricula.
- Exploit available resources to enhance the provision of entrepreneurship education as a cross-campus offering.
- Encourage students to re-learn from experience, explore theory and practice and focus on building commercial awareness and venture creation skills that can be deployed in any context, not just in setting up a business.
- Develop a broad base of learning models and approaches that enable experimentation, support self-discovery and provide access to practitioners via experiential and effectuation models of learning.<sup>52</sup>
- Encourage students to initiate and join clubs and societies as these provide practical opportunities to develop enterprise skills and experience entrepreneurial action in practice. Educators can provide training on

project management, budgeting and other professional skills needed.

- Secure opportunities meaningfully to engage entrepreneurial alumni as role models, mentors and speakers. Links with alumni can also extend to offering support on access to capital, advice on IP, management development and other training where they have nascent entrepreneurial ambitions.
- Engage industry practitioners in curriculum innovation and offering extended entrepreneurial experiences and learning opportunities through 'real' projects and internships.

## Entrepreneurs

- Serve as a guest lecturer, entrepreneur-in-residence, mentor, role model, and member of curriculum advisory committees or Professor of Practice.
- Collaborate more proactively with academics to provide an entrepreneurial learning experience for students<sup>53</sup> through student placements and providing projects as case studies.
- Work as Entrepreneurial Fellows in a meaningful relationship with educators

52. Sarasvathy, S. (2007) op. cit., p.2. An adapted explanation from Sarasvathy explains that "the word 'effectual' is the inverse of 'causal'. In general, in MBA programmes across the world, students are taught causal or predictive reasoning. Causal rationality begins with a pre-determined goal and a given set of means, and seeks to identify the optimal – fastest, cheapest, most efficient, etc. – alternative to achieve the given goal. Effectual reasoning, however, does not begin with a specific goal. Instead, it begins with a given set of means and allows goals to emerge contingently over time from the varied imagination and diverse aspirations of entrepreneurs and the people they interact with."

53. Abreu, M. et al. (2008 forthcoming) op. cit.; Lucas, W. (2007) op. cit.

## Case example 8: Engaging entrepreneurs – lessons from entrepreneurs in practice at Wake Forest University, North Carolina

At Wake Forest University approaches and strategies have included:

- Using entrepreneurial alumni from particular subject disciplines as role models and guest lecturers. As adjunct faculty, entrepreneurs can be useful in outlining the case for entrepreneurship education – they are enthusiasts by nature and often want to work to advance entrepreneurial interests at their *alma mater*.
- Co-teaching courses with entrepreneurs and regular faculty as a way of bridging theory and practice.
- Using entrepreneurs as advisers or mentors to student ventures or as a sounding board for students and academics who are considering creating a spin-out business.
- Using entrepreneurs on panels for business plan competitions or to provide input where grant funding is allocated to students on a proof of concept basis to explore possible business ideas.

**Source:** Dr Elizabeth Gatewood, Office of Entrepreneurship and Liberal Arts, 2008. [www.entrepreneurship.wfu.edu/](http://www.entrepreneurship.wfu.edu/)

## Case example 9: Celebrating entrepreneurship in action – lessons from KaosPilots in Denmark

The KaosPilots programme in Denmark adopts a value-based approach to entrepreneurship centred on a new understanding of modern entrepreneurship. This recognises that an entrepreneurial education leads not only to students getting good jobs, but that it enables them to create new and exciting jobs for the future. This requires:

- an institutional culture and learning experience based on the practice of entrepreneurship;
- a learning process based on a commitment to being playful, creative, curious, solving 'real world' problems, street-wise (in touch with communities) and compassionate;
- an approach that creates the right balance between 'head, heart and hand – the balance between the action-oriented, the intellectual and the emotional aspects of learning';
- an experience where students learn together and take risks together by co-creating, testing, displaying and developing solutions to global social challenges; and
- a connection with social innovation and people working in an emerging 'fourth

sector' where business, not-for-profit and community interact.

The KaosPilots programme also disconnects entrepreneurship and 'money' through embedding the learning of entrepreneurship in 'values'. By adopting a broad definition of entrepreneurship – defined as opportunity identification and value creation – and by channelling creativity and innovation to create value in the community, students are more easily engaged. A values-based approach situates their learning within a framework that allows students to shape their own meaning of entrepreneurship.

KaosPilots shows that entrepreneurial students are generally not 'business studies' students. 'Business' per se is often alien to KaosPilots students – they find purpose in something that offers a gateway to their future, and that in turn requires them to be entrepreneurial.

For many students, the KaosPilots experience is more about finding a career with meaning and purpose. Many students focus not on existing careers, but on creating the careers that they want to have – careers which provide a sense of meaning, purpose and autonomy.

**Source:** Uffe Elbaek, KaosPilots A-Z, 2006.  
[www.kaospilots.dk](http://www.kaospilots.dk)

where they share ownership of the design and delivery of entrepreneurial outcomes. This could involve entrepreneurs and business people providing input to align the curriculum with industry/employer needs and acting as external examiners on module design where required.

- Host Academic Fellows on placements to ensure knowledge exchange operates in both directions. This fosters improved links between academia and the outside world and can enhance and enrich the learning process by using these external contributors in teaching and knowledge exchange.

### Students

- Seek opportunities to engage with entrepreneurial networks to develop contacts, build the social capital needed to take entrepreneurial action, and have access to contacts for proof of concept, funding to support an idea, and market testing.
- Enrol on entrepreneurship courses and participate in extra-curricular activities including student clubs and societies, competitions and social enterprises. These allow experimentation with ideas and concepts, provide opportunities to network

and can help to inform career path choices; all of which provide genuine entrepreneurial experiences. Organisations value graduates who can demonstrate their entrepreneurial and personal skills in problem creating and solving, opportunity spotting, project management, budgeting, team-work, communication skills and coping with pressure.

- Determine to create a career which provides a sense of meaning, purpose and autonomy.
- Participate in international programmes and exchanges to experience entrepreneurship, learning and work experiences outside the UK.

## Government

- Develop a set of overarching strategic goals, such as in the Norwegian Government example,<sup>54</sup> where key Ministries have collaborated to develop a national policy framework that sets out clear objectives and addresses progression across the entire education spectrum.
- Implement the European Union's Oslo Agenda that established a commitment to promote the integration of the learning experience of enterprise and entrepreneurship from primary school through to secondary school, vocational education and university across all subject areas.<sup>55</sup> There is also an emerging consensus across Europe that entrepreneurship education must stretch beyond a narrow focus on business start-up to equip young people with the personal skills, attributes and behaviours that focus on creativity, initiative, self-confidence and practical experience.<sup>56</sup>
- Influence government agencies such as the funding councils, quality assurance agencies and regional development agencies to further enhance their support for entrepreneurship in higher education.

54. Norwegian Directorate for Education and Training (2006) 'Norwegian Strategy Plan for Entrepreneurship in Education.' Oslo: Norwegian Directorate for Education and Training.

55. European Commission (2006) 'Entrepreneurship Education in Europe: fostering entrepreneurial mindsets through education and learning.' Oslo: European Commission.

56. Ibid. Recommendations from Workshop 3.

## Appendix A: NCGE Strategic Models<sup>57</sup>

### Model 1: The Fully Integrated and Embedded (Optimum) Model

The Optimum Fully Integrated Model would include the following characteristics:

- University-wide application of entrepreneurship teaching.
- Joined with office of technology transfer.
- Innovative pedagogical support for every department.
- Life-long learning approach in all departments.
- All departments and subjects covered.
- Emphasis upon interdisciplinary teaching, degrees and centres.
- Professorial status for Research and Development excellence.
- 'Development' sabbaticals for staff wishing to commercialise IP.
- Professors of Practice, Adjunct Professors, Visiting Development Fellows.
- Entrepreneur teams invited in to harvest ideas.
- Social integration of entrepreneurs and status awarded to them.
- Entrepreneurship as an office of the Vice-Chancellor.
- All activities academic-led but in partnership with external stakeholders.
- Research and development activity rewarded in all departments.
- Active stakeholder participation with university staff in joint ventures.
- Open approach to intellectual property and investment in university ventures.
- Staff of departments trained to develop and offer entrepreneurship courses.

57. Source: Gibb, A. (2005) 'Towards an Entrepreneurial University' Policy Paper 3. Birmingham: NCGE. Available at: [http://www.ncge.com/uploads/Exec\\_Summary\\_-\\_AllanGibb.pdf](http://www.ncge.com/uploads/Exec_Summary_-_AllanGibb.pdf) [Accessed on 17 August 2008].

### Model 2: The Intermediate – University-Led Model

An Intermediate Model, more adjacent to the university, but still led by it, might include:

- A specialist centre, university-owned but adjacent to the university.
- Headed by university professor.
- Programme and pedagogical development/emphasis.
- Development of specialist entrepreneurship programme offer to all departments.
- Offers of staff training.
- Centre established as stakeholder partnership.
- Staff appointments open to external stakeholders.
- Harvesting departmental staff who wish to engage in entrepreneurship.
- Joint ventures and programmes with science park and technology transfer processes.
- Engagement with panels of entrepreneurs to encourage linking with departments to harness technology.
- Links to business support services and venture capitalists.

### Model 3: The External Support Model – Stakeholder-Driven

A more External Business Services Support Model might be a compromise embracing:

- A specialist centre, stakeholder-owned but with university participation.
- Headed by business executive.
- Located alongside technology transfer or science park activity.
- Training programme offers to departments.
- Counselling and business support services offer to university staff and students.
- Promotions and other activities.
- Joint ventures with science parks and technology transfer agents.
- Engagement with the entrepreneurial and stakeholder community.
- Partnerships with interested academic staff.

## Appendix B: NCGE Entrepreneurial Learning Outcomes Framework<sup>58</sup>

### A. Entrepreneurial behaviour, attitude and skill development

Key entrepreneurial behaviours, skills and attitudes have been developed (these will need to be agreed and clearly set out)

To what degree does a programme have activities that seek clearly to develop:

- opportunity seeking
- initiative taking
- ownership of a development
- commitment to see things through
- personal locus of control (autonomy)
- intuitive decision making with limited information
- networking capacity
- strategic thinking
- negotiation capacity
- selling/persuasive capacity
- achievement orientation
- incremental risk taking

### B. Creating empathy with the entrepreneurial life-world

Students clearly empathise with, understand and 'feel' the life-world of the entrepreneur

To what degree does the programme help students to 'feel' the world of:

- living with uncertainty and complexity
- having to do everything under pressure
- coping with loneliness
- holistic management
- no sell, no income
- no cash in hand, no income
- building know-who and trust relationships
- learning by doing, copying, making things up, problem solving
- managing interdependencies
- working flexibly and long hours

### C. Key entrepreneurial values

Key entrepreneurial values have been inculcated

To what degree does the programme seek to inculcate and create empathy with key entrepreneurial values:

- strong sense of independence
- distrust of bureaucracy and its values
- self made/self belief
- strong sense of ownership
- belief that rewards come with own effort
- hard work brings its rewards
- belief that can make things happen
- strong action orientation
- belief in informal arrangements
- strong belief in the value of know-who and trust
- strong belief in freedom to take action
- belief in the individual and community not the state

58. Source: Gibb, A. (2005) 'Towards an Entrepreneurial University' Policy Paper 3. Birmingham: NCGE. Available at: [http://www.ncge.com/uploads/Exec\\_Summary\\_-\\_AllanGibb.pdf](http://www.ncge.com/uploads/Exec_Summary_-_AllanGibb.pdf) [Accessed on 17 August 2008].

## D. Motivation to entrepreneurship career

Motivation towards a career in entrepreneurship has been built and students clearly understand the comparative benefits

To what degree does the programme help students to:

- understand the benefits from an entrepreneurship career
- compare with career as an employee
- have some entrepreneurial 'heroes as friends' acquaintances
- have images of entrepreneurial people 'just like them'

## E. Understanding of processes of business entry and tasks

Students understand the process (stages) of setting up an organisation, the associated tasks and learning needs

To what degree does the programme take students through:

- the total process of setting up an organisation from idea to survival and provide understanding of what challenges will arise at each stage
- how to handle these challenges

## F. Generic entrepreneurship competencies

Students have the key generic competencies associated with entrepreneurship (generic how-to's)

To what degree does the programme build the capacity to:

- find an idea
- appraise an idea
- see problems as opportunities
- identify the key people to be influenced in any development
- build the know-who
- learn from relationships
- assess business development needs
- know where to look for answers
- improve emotional self awareness, manage and read emotions and handle relationships
- constantly see yourself and the business through the eyes of stakeholders and particularly customers

## G. Key minimum business how-to's

Students have a grasp of key business how-to's associated with the start-up process

To what degree does the programme help students to:

- see products and services as combinations of benefits
- develop a total service package
- price a product service
- identify and approach good customers
- appraise and learn from competition
- monitor the environment with limited resource
- choose appropriate sales strategy and manage it
- identify the appropriate scale of a business to make a living
- set standards for operations performance and manage them
- finance the business appropriately from different sources
- develop a business plan as a relationship communication instrument
- acquire appropriate systems to manage cash, payments, collections, profits and costs
- select a good accountant
- manage, with minimum fuss, statutory requirements

## H. Managing relationships

Students understand the nature of the relationships they need to develop with key stakeholders and are familiarised with them

How does the programme help students to:

- identify all key stakeholders impacting upon any venture
- understand the needs of all key stakeholders at the start-up and survival stage
- know how to educate stakeholders
- know how to learn from them
- know how best to build and manage the relationship

## Appendix C: Panel Biographies

### **Professor Allan Gibb BA PhD OBE**

Professor Emeritus, Durham University, England

Allan Gibb, former chair and Director of the Small Business Centre at Durham Business School, England, has been engaged in the field of Entrepreneurship and Small Business Enterprise development for over 30 years. He has experience in over 80 countries around the world, has been adviser to many governments, governmental organisations and non-government entities and has worked with all of the major international development organisations. He has broad expertise ranging from the field of education at all levels, to small and medium-sized business creation, development and internationalisation, and large company restructuring and intrapreneurial development. He has published widely on issues covering enterprise/entrepreneurial education, SME policy development, entrepreneurial restructuring of organisations and management development.

### **Uffe Elbaek**

Founder and former principal of The KaosPilots – International School of New Business Design and Social Innovation, Denmark

Uffe Elbaek was founder and principal of the KaosPilots in Denmark (from 1991 to 2006), a world-renowned centre for value-based entrepreneurship education – it provides an educational experience like none other. Uffe is also a regular contributor to a range of leading Danish and International newspapers and magazines. In November 2001 and again in 2005 Uffe Elbaek was elected to Aarhus City Council (Denmark's second city) for the Danish Social-Liberal Party.

He is also on the board of several Danish and international organisations, and has received numerous honours and awards, ranging from his appointment as ambassador for the local premier league football club AGF to Knight of the Dannebrog. Uffe is currently the CEO of the World Outgames 2009 being held in Copenhagen next year and Special Advisor for the new leadership team at KaosPilots.

### **Professor Daniel Hjorth, PhD**

Professor of Entrepreneurship and Innovation Management, Copenhagen Business School, Denmark

Daniel Hjorth is Research Director (for the Organisational Creativity Group) at the Department of Management, Politics and Philosophy, Copenhagen Business School. Daniel is (together with Chris Steyaert) editor for a series of four books (2003, 2004, 2006, and 2009 published by Edward Elgar) that represent a new movement in entrepreneurship studies. His work is also published

in 'Organization', 'Human Relations', 'Journal of Management Inquiry', 'Journal of Management Education', and 'Journal of Business Venturing'.

Daniel is presently focusing on Organisational Creativity; Aesthetics in Business Competitiveness; and A Philosophy of Entrepreneurship. He was (together with Magnus Aronsson) in 1998 founder of the now Nordic yearly workshop on 'Entrepreneurship and Learning' (in Stockholm) and has wide experience of developing and teaching entrepreneurship at business schools, teachers' colleges, technical universities, and art schools.

### **David Clews**

Director of the Higher Education Academy Art, Design and Media Subject Centre, England

David Clews is a registered architect and after ten years in practice became a full-time academic. He is the author of 'Creating Entrepreneurship', a report with NESTA based on research into Entrepreneurship Education for the Creative Industries. He has spoken at conferences and HEIs on enhancing graduate entrepreneurship in art, design and media subjects.

David is an executive member of the Design Educators' Association and the Group for Learning in Art and Design, an independent assessor for the Architects Registration Board and a member of the Royal Institution of British Architects Visiting Board. The Subject Centre supports a wide range of research and development aimed at the link between learning and professional practice. David is currently supervising a research project on the links between creative industry and higher education on behalf of the Department for Culture, Media and Sport.

### **Dr Elizabeth J. Gatewood**

Director of the University Office of Entrepreneurship and Liberal Arts at Wake Forest University, USA

Elizabeth (Betsy) Gatewood leads an entrepreneurship centre focused on creating and sustaining an environment that fosters entrepreneurial thinking across the entire campus community at Wake Forest University. She most recently served as the Jack M. Gill Chair of Entrepreneurship and Director of The Johnson Centre for Entrepreneurship and Innovation at Indiana University. Betsy has been named as one of the top ten best entrepreneurship centre directors in the United States by *Entrepreneur Magazine*.

She is a member of the 'Diana' project, a national research study of women business owners and equity capital access. She and her colleagues were winners of the FSF-NUTEK International Award for scientific work of outstanding quality and importance in the field of entrepreneurship. Her research has been published in numerous leading academic journals in the area of entrepreneurship and new venture creation. Betsy also serves on numerous Boards and is recipient of many business and education awards.

### **Ian C. Ritchie CBE, FREng, FRSE**

Non-executive Chairman of Iomart plc, Scapa, Computer Applications Service, Caspian Learning and the Interactive Design Institute, Scotland

Ian Ritchie founded OWL in 1984 that pioneered hypertext application development (a forerunner to the world-wide web) and sold the company to Panasonic in 1989. Since then he has been involved in over 25 start-up high-tech businesses, including Digital Bridges, Voxar, VIS Interactive, Sonaptic and Orbital.

He has been a board member of Scottish Enterprise and of the Scottish Further and Higher Education Funding Council (SFC) and was a founding board member of the Scottish Institute for Enterprise. He was awarded a CBE in the 2003 New Year Honours list for services to education and entrepreneurship.

**Dr Tony Mendes**

Executive Director of the Academy for Entrepreneurial Leadership (AEL) at the University of Illinois at Urbana-Champaign, USA.

Tony Mendes is an acclaimed entrepreneurial educator who formerly served as Director of College Initiatives at the Kauffman Foundation. There, he managed a programme grant portfolio with over 200 colleges and universities. In his role with the Academy, Tony is responsible for the integration of an entrepreneurship curriculum in all of the academic units of the university. He is responsible for developing and delivering curricular and co-curricular initiatives targeted to faculty, student and administrative interests.

Prior to joining the Kauffman Foundation, he was founder and president of Mendes and Associates, a private consulting company. His teaching experience includes courses at numerous leading US universities. Tony also serves on numerous Boards and was the founding director of 'Entrepreneurs Without Borders', a university-based organisation dedicated to expanding entrepreneurial initiative throughout the world.









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