



Developing Entrepreneurial Graduates

Briefing Note 1
January 2008

NESTA



Building an Enterprising Britain

An input paper¹ presented at The Chancellor's Conference on 'Enterprising Britain' opined that "an understanding of what it means to be entrepreneurial is especially important for young people when they are going through transition points and weighing up choices about their future". It highlighted that enterprise and self-employment are becoming increasingly more attractive amongst young people, with the numbers of students who eventually want to run their own business rising from 35% in 2000 to 43% in 2003². By contrast there is evidence that the desire among students in their first year to engage in the spirit of entrepreneurship is undermined by their experience at university, so by the third year their aspirations are lower³.

A number of government reviews on building the knowledge economy of the future – the Sainsbury report on science and innovation⁴, the Leitch review on skills⁵, and the Lambert review on business-university collaboration⁶ highlight the marked culture change in the UK's universities over the past decade. These reports acknowledge that many universities are being driven to play a broader role in the regional and national economy by building bridges between business and universities and working with regional development agencies to support economic development. In addition, there is a clear recognition of the numerous shifts in the expectation of businesses in relation to what they expect of university graduates. This has seen many universities work more collaboratively with business in the design of the curriculum, the placement of graduates in local businesses, and on technology exchange.

These developments and the focus by policy makers on building an enterprising culture in the United Kingdom and placing universities at the centre of the country's economic development⁷ provide the context within which enterprise and entrepreneurship stimulation is an increasingly important part of the domain that is a university. UK business recognises that continuous innovation has to lie at the heart of our economic future⁸. This requires an increase in the pace of innovation and an increase in the number of businesses that are high value-adding, driven by innovation and packed full of dynamic entrepreneurially-minded people, more than often university graduates.

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¹ HM Treasury: 'Creating an Enterprise Culture – Discussion Paper for Advancing Enterprise'; Britain in a Global Economy, 2004

² Business Dynamics: Student Attitudes to Business, 2003

³ ISBA consortium: 'Making the Journey from Student to Entrepreneur: a Review of the Existing Research into Graduate Entrepreneurship', NCGE, September 2004; NCGE and Barclays Bank: 'Nascent Graduate Entrepreneurs: exploring the impact of student debt on graduates' plans to set up a business', 2006

⁴ Lord Sainsbury of Turville: 'The Race to the Top: a Review of Government's Science and Innovation Policies', October 2007

⁵ Lord Leitch: 'Review of Skills: Prosperity for all in the global economy – world class skills', December 2006

⁶ Lambert Report: Review of Business-University Collaboration', December 2003

⁷ Richard Brown and Philip Ternouth: 'International Competitiveness: Businesses Working with Universities', CIHE, May 2006

⁸ See also DTI Occasional Paper no 6; 'Innovation in the UK', July 2006

Meeting these global challenges will require an entrepreneurial response of universities, both in terms of preparing graduates for future global challenges and ensuring that universities participate in the knowledge economy of the future through active collaboration with business⁹. Research by NESTA¹⁰ on education for innovation and entrepreneurship highlights the need to imbue young people with opportunities for personal mastery in learning to take initiative, challenging the status quo, creativity, leadership collaboration, enterprise, risk-taking, innovation, attitude and ambition to develop new ideas, new products, new markets for the future. Young people need to be prepared to be at the vanguard of disruptive innovation to address global challenges, working in high growth and dynamic companies, and with the ability to innovate through exploiting new ideas in entrepreneurial markets.

In parallel with these developments in society and the broader economy¹¹, research by the National Council for Graduate Entrepreneurship (NCGE)¹² highlights the growing involvement of UK universities in teaching entrepreneurship and interest in building enterprise skills and capabilities in their students underpinned by a shift in the needs of business. Current estimates show that approximately 889 degree programmes or modules are on offer at 131 Higher Education Institutions (HEIs) in England at either undergraduate or postgraduate levels. This is a substantial improvement from earlier research that showed that 38% of English HEIs offered courses in entrepreneurship¹³. Student perceptions are also changing, with increasing numbers of students registering an interest in following an entrepreneurial career.

The Oslo Agenda developed at a EU conference in 2006 established a commitment to promote the integration of the learning experience from primary school through to secondary school and university across all subject areas¹⁴. There also appears to be an emerging consensus across Europe that entrepreneurship education must stretch beyond a narrow focus on business start-up and equip young people with the personal skills, attributes and behaviours that focus on creativity, initiative, self-confidence and having an experience of entrepreneurship¹⁵.

Project Overview

The Council for Industry and Higher Education (CIHE) recently partnered with the National Council for Graduate Entrepreneurship (NCGE), the Higher Education Academy and the Small Business Service (SBS) in reviewing Good Practice in Entrepreneurship Development in UK HEIs¹⁶. This review was intended to identify to what extent the initiatives undertaken by HEIs in the UK were, or were likely to be effective in developing entrepreneurial graduates.

⁹ Allan Gibb: 'In pursuit of a new 'enterprise' and 'entrepreneurship' paradigm for learning: creative destruction, new values, new ways of doing things and new combinations of knowledge'; 2002, International Journal of Management Reviews, Vol. 4, No. 3; Claire Leitch and Richard Harrison 'A Process Model for Entrepreneurship Education and Development', 1999, International Journal of Entrepreneurship Behaviour and Research, Vol. 5, No. 3; NESTA Policy Briefing: 'Innovative Entrepreneurship in the UK', January 2007

¹⁰ NESTA Policy Briefing: 'Education for Innovation', April 2007

¹¹ HM Treasury provided £60 million for secondary schools to offer a five-day entitlement of enterprise experience to young people at Level 4. Enterprise Insight is funded by the government to run a national campaign to excite young people about enterprise. At university level, government support has involved the Science Enterprise Challenge Fund (1999), Higher Education Subject Centres (2004); the National Council for Graduate Entrepreneurship (2004); Centres for Excellence in Teaching and Learning (2005); the Higher Education Innovation Funds (2001-2007) and support for entrepreneurship education in the creative industries by the Department of Culture Media and Sport (2006)

¹² Paul Hannon: 'Enterprise for all? The fragility of enterprise provision across England's HEIs', 2007, Journal of Small Business and Enterprise Development, Vol. 14, No. 2

¹³ Jonathan Levie: Entrepreneurship Education Higher Education in England, London Business School, 1999 in Colin Mason report: 'Teaching Entrepreneurship to Undergraduates: lessons from leading centres of entrepreneurship education', Department of Geography, University of Southampton, 2000

¹⁴ European Commission: 'Entrepreneurship Education in Europe: fostering entrepreneurial mindsets through education and learning', Oslo 2006

¹⁵ Oslo conference Recommendations, workshop 3, 2006

¹⁶ Ron Botham and Colin Mason: 'Good Practice in Enterprise Development in UK Higher Education', NCGE, CIHE, HE Academy, Enterprise Insight, SBS, 2006

Issues identified from this research along with a number of parallel country studies¹⁷ and research undertaken by the NCGE¹⁸ found: -

- (i) tension between the HEI culture of formal academic teaching¹⁹ (in which “instruction” in enterprise development may be embedded) and entrepreneurial practice, experience and support activities in which students may be mentored;
- (ii) varying degrees of “embedding” across institutions with evidence that some are too reliant on short-term initiative funding and the enthusiasm of individuals; both result in this activity being inherently fragile;
- (iii) varying extent to which formal objectives had been set for the activity and evaluation methods established; in this context it is useful to note that there had been little objective setting in the formal, structured fashion implied by the outcomes framework developed by the NCGE;
- (iv) many combinations of different learning and support arrangements with some patchy evidence of effectiveness in individual cases;
- (v) varying contribution from and perceived utility of the engagement of business schools;
- (vi) 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.

The current body of evidence both in the UK and from a wide range of international experiences (e.g. the eight country studies commissioned by CIHE and NCGE covering education practices in the EU, China, South East Asia, India, South Africa, Ireland and the USA) show several dimensions of variation in the configuration of entrepreneurship education in the university sector. Key differences relate to subject specificity, stages in enterprise development, the outcomes achieved, types of provision, and barriers experienced in delivering it on the ground in and outside the classroom/lab.

Project objectives

The objective of this project titled ‘Developing Entrepreneurial Graduates’ is to develop a pilot specification for encouraging the development of more entrepreneurial graduates at UK universities. With the assistance of an expert panel, the project team will develop a specification for a pilot that will then be established and evaluated in one or more universities in the second phase of the project. The role of the expert panel in this project is to review a range of evidence presented to it by the project team **drawing on their own experience and expertise**. Thus the panel will assist the project team to interpret the evidence of current developments and trends, contributing to, and refining the development of the specification for a pilot to be implemented in Phase 2.

As a unique partnership of leading thinkers in the policy domain of entrepreneurship, innovation, business and higher education, the NESTA-NCGE-CIHE project consortium aims to address the aforementioned issues. More specifically, and in partnership with the expert panel this project provides us with an opportunity to influence higher education practice and UK government policy.

What do we know so far?

The NCGE’s mapping study found an 11% engagement rate by students in reported enterprise activity, of which two thirds involved extra-curricular activity. 80% of provision is at an undergraduate level and approximately two thirds of all entrepreneurship education provision in the curriculum is in the form of modules rather than full degree programmes. Business schools dominate provision – 61% of all delivery, followed by engineering, arts, design and media. Curiously the mapping survey reveals some interesting but not surprising results about

¹⁷ CIHE Country Studies commissioned as part of the research undertaken with the NCGE

¹⁸ Hannon op cit

¹⁹ Allan Gibb op cit

the intended primary learning outcomes of entrepreneurship education – 27% is focused on “raising awareness, knowledge and understanding about enterprise/entrepreneurship concept and practice”; 15% on “developing individual enterprising/entrepreneurial skills, behaviours and attitudes” and 10% on “exploiting institutionally owned IP”. There is little support for learning outcomes such as “developing key business how-to’s”, “preparing to become a freelancer or self-employed” and “starting a new business”. This is rather remarkable given the ambition of government policy to promote graduate entrepreneurs starting innovative, high growth new business ventures. However, the NCGE report also cautions the interpretation of the findings as there is much regional variation in the data and the questionnaire only asked respondents to capture primary learning outcomes, and thus many of the suggested 13 learning outcomes may in fact be present in current university practice.

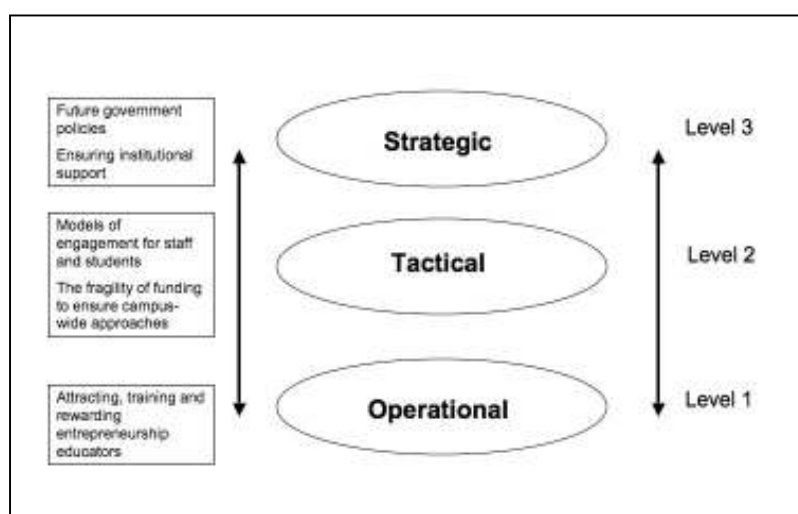
The diverse landscape at UK HEIs reflects the US experience where much of the entrepreneurial learning experience is about learning *about* entrepreneurship or about developing the *related skills* and behaviours. There is great diversity in the conceptions of enterprise and entrepreneurship, with most subscribing to a simple linear divide that the outcomes are either about becoming an entrepreneur or about being entrepreneurial²⁰. There is also much regional variation in the scale of provision, the commitment by universities to this agenda and the levels of engagement by students.

Key ‘how to’ issues

This Briefing Note poses a range of questions which we believe need to be considered in the deliberations between the panel and the project team. These are crafted as a series of ‘how to’ questions which affect the current practice of entrepreneurship education in universities today, but will need to be resolved as these issues will determine the outcome of future policy and practice. This ‘working framework’ is subject to input from panel members and the priorities listed here will no doubt change as the project moves forward.

Outlined below is a three tier framework with which to consider a range of **strategic, tactical and operational issues** facing the development of an overarching entrepreneurship education specification for universities. These are outlined briefly here, and are underpinned by a plethora of research, some of which is offered as additional reading in the footnotes. Although raised here as unanswered questions, it will be the purpose of the expert panel to offer their insights and perspectives to help us resolve these key how to’s as part of the development of the draft specification framework.

Figure 1: Specification Development Framework



²⁰ Andrew Atherton: ‘Unbundling Enterprise and Entrepreneurship’, 2004, Innovation and Entrepreneurship, May

Strategic issues

What policies should be adopted at a national, regional and institutional level?

If one considers the experience in Norway, the government has developed a national policy framework that sets out clear objectives and covers the entire education spectrum from primary school to university. By contrast the Kauffman Campus Initiative shows what can be achieved by engaging universities through a competitive bidding process to establish campus-wide entrepreneurship education programmes at eight universities in the United States²¹. At a local level, the Cambridge MIT Initiative²² (CMI) experience highlighted what can be achieved through a partnership approach between two institutions that allowed for the exchange of ideas, good practice and experiences. The aforementioned examples provide three different policy approaches or pathways that could possibly be encouraged. What policy pathway should the UK adopt at a national, regional and institutional level to support the embeddedness of entrepreneurship education²³?

How do we ensure institutional support in universities to champion entrepreneurship education with a clear vision and clarity about its outcomes, impact and value?

The experience in the US shows that universities are successful at embedding entrepreneurship education within the institution where they have support from senior management (primarily the Vice Chancellor). The Kauffman Campus Initiative shows that institutional support is crucial especially where one is attempting to adopt a 'campus-wide' model which requires it to be embedded in academic departments outwith business schools. Securing active leadership from the Vice Chancellor (not only official support) but also from other central administrative units, the technology transfer office and faculty staff is crucial for embedding entrepreneurship education in degree programmes of non-business disciplines²⁴. Aside from the leadership dimension, there are a number of questions related to *the nature of institutional provision* that require consideration. The UK experience shows that to date, as with the US, business schools dominate the delivery of entrepreneurship education (64%). This causes perceptions about entrepreneurship being 'for business studies students' and not relevant to disciplines in engineering, the sciences and creative arts and media²⁵. Given this current positioning of entrepreneurship education at UK universities:- Should the development of an entrepreneurial approach be embedded across all university departments and courses? Should it be focused in the business school which should then deliver the learning to others? Should it only involve elective options within the curriculum? Should it be delivered outside of the curriculum as an additional option? Given the inadequate state of knowledge on what works and why, and the limited resources to deliver entrepreneurial approaches, it is not self evident that the first option (which we might initially prefer) is necessarily the appropriate one at this stage. Although the diversity of definitions, approaches, outcomes and take-up is at one level the key requirement for success (an entrepreneurial response to suit the institution), are we better placed establishing a national framework (as a template) within which institutions can build an approach to suit their needs?

Tactical issues

What models and modes of engagement for staff and students are needed to ensure that the design of the educational experience allows for innovative pedagogy and a diversity of learning outcomes?

Ambitions for achieving substantial acceleration in the penetration of entrepreneurship education to all students (beyond the current level of 7% in England) and to cover all subject disciplines are undoubtedly constrained not only by limited resources, but also lack of modes of engagement, especially for faculty staff in non-business disciplines²⁶ who have to take the lead, design the courses and delivery to what may be a sceptical audience. The NCGE has developed a learning outcomes framework²⁷ which provides the building blocks for innovative

²¹ Judith Cone: 'Entrepreneurship on Campus: why the real mission is cultural change', Kauffman Foundation Thoughtbook, 2007

²² David Good, Suzanne Greenwald, Roy Cox and Megan Goldman (eds): 'University Collaboration for Innovation – lessons from the Cambridge-MIT Initiative', 2007

²³ Allan Gibb: 'Towards the Entrepreneurial University: Entrepreneurship Education as a lever for change', NCGE, May 2005

²⁴ David Clews: 'Creating Entrepreneurship: entrepreneurship education for the creative industries, NESTA, 2007

²⁵ James Fiet: 'The Pedagogical Side of Entrepreneurship Theory', 2001, Journal of Business Venturing, Vol. 16, No. 2

²⁶ James Fiet: 'The Theoretical Side of Teaching Entrepreneurship', 2001, Journal of Business Venturing, Vol. 16, No. 1

²⁷ Allan Gibb: 'Entrepreneurial Learning Outcomes – a benchmark framework', NCGE, 2006

pedagogy and module design. Many of these learning outcomes demand an *experiential and action-based* approach to learning²⁸ – learning by doing, learning by making mistakes, learning through the eyes of entrepreneurs and learning captured through innovative learning logs, not business plans. *At present entrepreneurship education in UK universities is operating on the margins, a peripheral activity with limited reach in the student base. What radical change is needed in the educational experience, in what we expect from the learning process and in the way it is delivered in the classroom/lab?*

How do we address the current fragility of funding and resources needed to mainstream this activity across campus at all universities nationally?

The experience in England shows that funding streams to support this activity are fragile. The NCGE mapping study of English universities found that 80% of funding is provided by public sources. These are subject to three year spending priorities, are competing with many other demands on the public purse, and often only provide seed funding for activity. How do we ensure the sustainability of funding for entrepreneurship education in universities? There is also anecdotal evidence that most graduates enter entrepreneurship practice when they are around 30. This raises additional questions about resources. What is the role of the university as an access point for alumni and those in the local community as a centre of expertise? In an age of lifelong learning universities need to give consideration to not just developing an HE experience for the young. Are there different phases of an entrepreneurial learning experience? Some may want to go through all of them and then start a business; some may want a taster and to have their excitement raised; some may want to get a deeper experience and then return; some may come to the idea much later and then want to gain the experience as a mature learner. Can one size fit all or are there a range of approaches and modules needed? If so, how do universities configure and resource these different permutations of an entrepreneurial learning experience?

Operational issues

How do universities attract, train and reward entrepreneurship educators to ensure appropriate learning outcomes are achieved?

Research by the NCGE demonstrates that skilled, talented and passionate entrepreneurship educators in universities are fundamental to the success of embedding a campus-wide approach²⁹. Recognition of this has led the NCGE to establish a national entrepreneurship educators programme. The US experience on the Kauffman campuses³⁰ also shows that having the ‘right people’ is a key ingredient for success. Evidence from the eight Kauffman campuses shows that the following forms of institutional action are important: training support for academic faculty, research grants available to staff and students to undertake entrepreneurship research in their subject discipline, and actively rewarding participation in the delivery of entrepreneurship education. What can be done in the UK to ensure that the recruitment and retention of teaching and research talent across all disciplines accommodates the requirements of innovative pedagogy and entrepreneurial outcomes? Should universities use existing academic faculty (and provide specific staff development training) or is there a need to employ staff from outside the university sector to bring business experience to implement an entrepreneurship education strategy? How do we go about employing staff who can bring ‘real world’ experience into the classroom? What is the role of external practicing entrepreneurs; how can they act as role models, mentors and coaches? What other external practitioners are needed on campus (or at least on call as part of a university network) such as business angels, venture capitalists, IP experts and other business support agencies?

In summary, these five questions are framed not just as questions to answer, but as themes to consider in the context of the project developing a specification framework for adopting a holistic and campus-wide approach to embedding entrepreneurship education in UK universities. The challenges are substantial – the Botham and Mason report highlighted the

²⁸ Leitch and Harrison op cit

²⁹ Hannon op cit

³⁰ Laura Hulsey, Linda Rosenberg and Benita Kim: ‘Seeding Entrepreneurship Across Campus – early implementation experiences of the Kauffman Campuses Initiative’, December 2006

stark realities of current practice in UK HEIs – it operates at a small scale, few students are engaged, few subject areas are covered, and there is a lack of educators and a lack of resource to support activity as an embedded part of the student learning experience. There is systemic fragility that needs to be addressed.

So... what do we need?

The challenge for the expert panel and the project team is scoping out an entrepreneurship education specification framework that will ensure: we have sustainable sources of funding; a coherent national policy framework; we encourage experimentation; we develop long term institutional models which are adaptive; we achieve scale of delivery in HEIs; we can rely on core funding as a result of demonstrated learning outcomes which add value to universities and business and a framework which links students with entrepreneurs, university alumni, the best companies to work for and a diverse range of external agencies that can also support the delivery of a robust entrepreneurship education framework.



Developing Entrepreneurial Graduates

Briefing Note 2
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NESTA



Modelling the Entrepreneurial Life-world in Learning

Defining entrepreneurship

For this project we have taken entrepreneurship “as being concerned with the personal attributes, behaviours and skills associated with the creation of value by applying resources in order to innovate”. What are the implications (inclusions and exclusions effected) of making this definition on potential learning outcomes?

Exploring effectual thinking

There is a substantial body of literature¹ on entrepreneurship and its development that concerns the differences between effectual and causal thinking, and the importance of the former in the life-world of the entrepreneur. Effectual thinking, it is argued, is critically important in the creation, development and execution of entrepreneurial opportunities. This matches recent cases studied by the project team². Accordingly, we considered that the issues raised by a study of this literature³, and particularly the way in which they contrast with the conventional pedagogy of business management, should be deliberately considered by the expert panel in this project.

In (1) Sarasvathy states:

“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. The make-vs-buy decision in production, or choosing the target market with the highest potential return in marketing, or picking a portfolio with the lowest risk in finance, or even hiring the best person for the job in human resources management, are all examples of problems of causal reasoning. A more interesting variation of causal reasoning involves the creation of additional alternatives to achieve the given goal. This form of creative causal reasoning is often used in strategic thinking. 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 the founders and the people they interact with.”

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¹ Key examples from the literature may be found on <http://www.effectuation.org/>

² Including an unpublished PhD thesis studying the origins of The Transitive Corporation which specifically identifies and describes the effectual behaviour of the founder, and which has been reviewed by a member of the project team in the context of an interviewee in the research.

³ In ‘What makes Entrepreneurs Entrepreneurial’ (1) <http://www.effectuation.org/ftp/What%20makes%20entrs%20entl%20note.pdf> and (2) ‘Causation and Effectuation: Towards a Shift from Economic Inevitability to Entrepreneurial Contingency’, The Academy of Management Review, Apr 2001, Vol.26, No.2, ABI/INFORM Global pg. 243 <http://fp.tn.tue.nl/ecis/EcisA12004/sarasvathy.pdf>

Effectual reasoning: the process

All entrepreneurs begin with three categories of means: (1) Who they are – their traits, tastes and abilities; (2) What they know – their education, training, expertise, and experience; and, (3) Whom they know – their social and professional networks. Using these means, the entrepreneurs begin to imagine and implement possible effects that can be created with them. Most often, they start very small with the means that are closest at hand, and move almost directly into action without elaborate planning. Unlike causal reasoning that comes to life through careful planning and *subsequent* execution, effectual reasoning lives and breathes execution. Plans are made and unmade and revised and recast through action and interaction with others on a daily basis. Yet at any given moment, there is always a meaningful picture that keeps the team together, a compelling story that brings in more stakeholders and a continuing journey that maps out uncharted territories. Through their actions, the effectual entrepreneurs' configuration of means and consequently the set of possible effects are changed and even possibly reconfigured. Eventually, the emerging effects coalesce into clearly achievable and desirable goals.

In (3) Sarasvathy⁴ finds from a study of successful entrepreneurs that “74% of the participants in the study behaved in accordance with the effectuation model at least 63% of the time, and 44% of them, at least 85% of the time”.

However “... in our classrooms, we teach potential entrepreneurs an extremely causal process – the sequential progression from idea to market research, to financial projections, to team, to business plan, to financing, to prototype, to market, to exit, with the caveat, of course, that surprises will happen along the way. Seasoned entrepreneurs, however, know that surprises are not deviations from the path”.⁵

The causal process is arguably much easier to incorporate into formal taught curricula than an effectual process. To what extent should/can the challenge of embracing effectuation in the pedagogy of entrepreneurship be met? What should the desired learning outcomes be, either in the form of (a) the development of the entrepreneur or (b) the understanding of entrepreneurship? How might formal taught material be combined with experiential learning in positioning causal and effectual reasoning with each other? How might we learn from the experience of the KaosPilots⁶?

Venkataraman's definition of entrepreneurship – “*entrepreneurship is concerned with understanding how, in the absence of markets for future goods and services, these goods and services manage to come into existence*” appears somewhat narrower than the one adopted for this project. If we examine the types of entrepreneurial opportunity characterised by Venkataraman and Sarasvathy⁷ et al in (4), then of the three types of opportunity described:

- *Opportunity Recognition* (supply and demand exist but need a deliberate effort to connect them);
- *Opportunity Discovery* (one exists and the entrepreneur creates the other);
- *Opportunity Creation* (if neither supply nor demand exist in an obvious manner, both have to be “created”) ...

it is the third that fits most easily with the narrower definition and it is also the third that is argued to be most susceptible to effectual reasoning to the exclusion of causal reasoning. This suggests that a positioning of the types of opportunity should be included in the desired learning outcomes. Furthermore, since there is a strong suggestion in the literature and in

⁴ ‘Entrepreneurship as a Science of the Artificial’, (3) Journal of Economic Psychology Vol. 24, 2003, pp203–220
www.effectuation.org/ftp/joep.pdf

⁵ See Sarasvathy (1) above

⁶ http://users.homebase.dk/~awi/Publications/Breaking_the_Waves.pdf

⁷ ‘Three views of entrepreneurial opportunity’ (invited book chapter in the Entrepreneurship Handbook, ed Acs et al)
www.darden.edu/batten/pdf/WP0013.pdf

particular in a technical paper by Sarasvathy⁸ (5) that types of reasoning relate to personal characteristics and preferences, then an effective positioning of the types of opportunity should include an element of personal discovery for the intended entrepreneurial graduate. The resources possessed and accessible to the entrepreneur (1) Who they are – their traits, tastes and abilities; (2) What they know – their education, training, expertise, and experience; and, (3) Whom they know – their networks might perhaps be a key feature of the starting point of this personal learning. How might this be achieved?

Aside from considering the incorporation of models of effectuation into the design of the specification to be developed in this project, there are also other theories and approaches which the panel may wish to consider. What of the use of models on emotional intelligence and the EI quotient which explores the ability, capacity, or skill to perceive, assess, and manage the emotions of one's self, of others, and of groups? How relevant is this to the domain of entrepreneurship education? What about the role of self-efficacy⁹ in instilling the required degree of confidence in an individual's belief about their skills and abilities to have not only the desire to start their own business but also the determination to successfully undertake all the stages of the venture creation process? Cooper and Lucas (pg80) argue that the work of the CMI project demonstrates that self-efficacy is central to the willingness of individuals to act in an entrepreneurial way, to identify and seize opportunities. *“Highly efficacious people are likely to possess greater confidence in their abilities to embark on challenging courses of action, and to persist in the face of obstacles which appear between them and their goal”*.

Using experiential methods of learning?

This introduces some further challenges; “Innovation Ecologies”, as for example described by Hague and Holmes¹⁰ are intensely localised. Should the curriculum include the practise and development of the skills of resource investigation as part of the experiential learning process?

To develop this further, Sarasvathy et al¹¹ (6) positions strategic management against entrepreneurship, and in doing so, considers the respective roles of each in the life of the firm against each other. There would appear to be a clear overlap between the two schools of thought in terms of encouraging creativity in existing firms. Sarasvathy further argues that effectual thinking can work best in existing firms where they are partially decomposable, i.e. where it is possible for parts of the firm to appear to other parts as composite ‘black boxes’. In order to accommodate the application of effectual thinking in existing firms how far should our curriculum also include the conventional theories and practice of strategic management in order for graduates to understand the respective positioning of these models of thinking, and how should the boundary be described?

Finally the literature includes material on the relationship between the entrepreneur and the firm, in (7) Sarasvathy¹² deliberately separates the role of the entrepreneur from that of the firm which s/he has been instrumental in forming or at least (in the context of creativity in an existing firm) and positions the firm in part at least as an instrument of the entrepreneur in reaching his or her personal aspirations. This has very particular challenges in marshalling a newly formed team behind a flag which may very well be marching towards an unclear and perhaps moving target. Should we address this issue specifically – entrepreneurial team building – in the scope of our learning outcomes? And if so, how might this be done?

⁸ ‘The Affordable Loss Principle’, Sarasvathy, 2006, Technical Paper, University of Virginia Darden School Foundation, www.effectuation.org/ftp/Affordable%20Loss%20Note.pdf

⁹ Sarah Cooper and William Lucas: ‘Enhancing Self-efficacy for Entrepreneurship and Innovation: an educational approach’, in Good et al, ‘University Collaboration for Innovation – lessons from the Cambridge-MIT Initiative’, 2007

¹⁰ ‘Oxford Entrepreneurs’ by Hague and Holmes, 2006, CIHE and Said Business School

¹¹ ‘Strategy and Entrepreneurship: Outlines of an Untold Story’ (6) Venkataraman and Sarasvathy, 2000, an invited book chapter in the Strategic Management Handbook, ed Hitt et al, www.effectuation.org/ftp/Hittbook.doc

¹² ‘Making it Happen - Beyond Theories of the Firm to Theories of Firm Design’ (7) Sarasvathy, 2002, presented at the Entrepreneurial Cognition Conference at the University of Victoria www.effectuation.org/ftp/ETPconf.doc



Developing Entrepreneurial Graduates

Briefing Note 3
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Enterprise Development Good Practice in Universities

CIHE has recently partnered with NCGE and others (including the Higher Education Academy and the SBS) in conducting a review of Good Practice in Entrepreneurship Development in UK HEIs. This review was intended to identify to what extent the initiatives undertaken by HEIs in the UK were, or were likely to be effective in developing entrepreneurial graduates.

The review (the Botham and Mason Report) covered in detail 13 UK universities selected from a long list of over 50. Those selected for detailed study were chosen in order that the sample included a spread of research intensive and less research intensive universities, subject specialisations and entrepreneurship development activities. The latter ranged from entrepreneurship “challenge” (e.g. business plan competitions) and entrepreneurship mentoring and support for potential or intending student entrepreneurs to the incorporation of more formal enterprise development modules within the taught curricula. The relevance of extra-curricula experiences was also considered.

The report from the review is a key item of evidence which we would like the panel to consider. Panel members will be free to comment and make suggestions as to the interpretations and implications as seems appropriate. However there are a number of specific matters arising from the report which we would like to direct the panel's attention.

Evaluation

Outwith the formal evaluation of student performance (e.g. for taught courses or dissertation work), few of the case study HEIs attempts to assess the impact of enterprise activity on participants. Furthermore the report states “*little is known about the effectiveness of HEI enterprise activities*”.

Given that (a) successful business start-ups by graduates may be a long term lagging indicator of performance and (b) business start-ups may not be the only desirable outcome of a successful learning experience (see the evidence below on creativity in established companies), how might the development of a framework for evaluation be best approached (e.g. by measuring the development of attitudes and aspiration)? In addition, how might feedback linked to the constituents of student learning opportunities be provided, whether or not it was tied into the learning outcomes suggested in the Gibb framework referenced in the Botham and Mason report? Is there a need to re-examine this outcomes framework for possible amendment or extension?

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Taught curricula, activities and the balance

Section 7 of the report describes a number of types of activities identified from the case studies which are intended (although not explicitly) to deliver desirable outcomes and relates the activities to the outcomes. The panel is invited to review and makes comments upon these relationships.

The report describes from its cases a mix of different activities, in the form of taught curricula and in the form of experiential learning. For example, formal taught elements might be: -

- within the business school;
- subject specific within curricula for mainstream subjects;
- specialist cross-disciplinary courses.

Similarly, it describes a range of experiential learning and practical activities, which include: -

- entrepreneurship “clubs”;
- entrepreneurship support (e.g. start up support and incubation);
- business plan competitions;
- external mentors;
- placements.

Given that there has been no formal evaluation of the entrepreneurship education in the HEIs studied (or specific objectives set) the panel is invited to comment on how an effective balance might be achieved and what approach to formal curriculum development, delivery, and the development and practise of enterprise support might achieve the desired outcomes.

In the light of panel members' experience and the other evidence presented, (especially that related to effectuation which might *prima facie* appear to conflict or preferably provide complementarity with the learning process and enterprise related activity described in this section), what should determine the extent to which these aforementioned elements might feature in the entrepreneurship education specification that is to be developed in this project as our eventual output? What elements should be regarded as core and what as elective elements?

Stakeholder relationships

Management of stakeholder relationships is an important area of competence which the report raises and which finds in concept at least, a direct match with the evidence presented concerning effectuation. However the report does not identify current practice in entrepreneurship education which is deliberately targeted at developing this area of competence. Hence ideas and suggestions from the panel as to how this might be addressed should form part of our considerations. However, the type of stakeholder relationship envisaged in the report might be very different from that envisaged in the effectuation literature, with a more transactional element in the former and relational/emergent in the latter.

Issues arising in section 8 of the report

The report, in its conclusions, highlights the difficulties of scaling up activity in section 8.1, and also recommends in section 8.5 that priority should be given to embedding entrepreneurship in mainstream curricula. It also highlights the fragility of funding and the sustainability of enterprise support activities. To a large extent these activities often rely on external staff who are not tenured academics, and may lack esteem among their teaching and research focused colleagues. This raises two sets of issues:

Firstly, each is an individual problem which may be susceptible to a well-targeted solution, and the panel is invited to comment on potential solutions. This does raise the second further fundamental issue which is potentially of strategic importance and which may arguably influence

the effectiveness of individual initiatives or panel recommendations (such as embedding the fragile support elements or achieving a parity of esteem and tenure between teachers/researchers and mentors). This issue is the extent to which entrepreneurial values and behaviours are actually part of the institutional culture. Our final output will need to identify this as a key issue that will influence how the pilot project is embedded within the eventual host institution. Indeed, it could be argued that the existing culture of the organisation and its willingness to embrace the type of changes that are necessary should form part of the selection criteria for the pilot study.

Other reports

The Botham and Mason Report was one of a number of papers presented at the NCGE International Conference in September 2006 at York, UK. The entire conference proceedings may be found online¹. In particular, we would like to refer the expert panel to the proceedings of Session D – “Achieving Entrepreneurial Outcomes: UK and International Practice”, which the Botham and Mason Report introduced. These included:

- Good Practices - Paul Magelli (Kauffman Foundation)
- Entrepreneurship Education in India - Kavil Ramachandran (India School of Business)
- Entrepreneurship Education in South East Asia HEIs (Assumption University)
- Entrepreneurship Education in Ireland - Dr Thomas M. Cooney (Dublin Institute of Technology)
- Graduate Entrepreneurship Education in China (SIFT), which covered a number of different institutions, namely:
 - China Youth University of Political Sciences
 - Guangdong University of Foreign Studies
 - Shanghai University of Foreign Trade
 - Shanghai International Studies University
 - Shanghai Normal University
 - Tongji University
 - University of Science and Technology of China

A number of issues arise from taking this evidence together on which the panel may wish to pass comment. Firstly, there is a great deal of emphasis on formal structures in several of the cases presented, particularly the Chinese and Indian Cases. Whilst there is a balance of formal taught and experiential learning in the Chinese cases², the formal structures apply just as much to the experiential learning as to the taught elements. See, for example, the pervasiveness of the “business plan”. Is such an organised approach for this element conducive to true entrepreneurship which, it might be argued, profits from challenging established structures and requires an individualistic approach? Note the comments “...most of the students tend to find jobs immediately after graduation instead of trying to set up their own businesses. That is the biggest challenge in entrepreneurship education...” in the report from Shanghai International Studies University. Is placing students in a formal competition organised by others likely to change this? The report from Ireland (Cooney) implicitly recognises the difference between education for employment in business and entrepreneurship but does not develop this theme. What, in the panel’s view, are the key differences which should be identified?

Secondly, given that entrepreneurship may be very much an individualistic pursuit, is there sufficient attention given generally in these curricula to the discovery and development of personal qualities through self-directed learning? This in itself might profit from the application of entrepreneurial characteristics such a modality of learning requires. (Such behaviours are, for example, included in the NVQ Level 4 and above Management Standards, and this level of qualification is equivalent to a Foundation Degree).

¹ NCGE conference proceedings at <http://www.ncge.com/communities/education/content/get/10>.

² See for example “The integrated entrepreneurship cultivation platform including contests, lectures and forums” in University of Science and Technology, China.

Thirdly, whilst there are a considerable number of desirable outcomes identified across the evidence³ there is no organised attempt to define how these might be measured to judge the effectiveness of the educational practises adopted. Evaluation of entrepreneurship education seems to be described largely by reference to anecdotes. Whilst there is an approach to formal evaluation described in the Guandong University of Foreign Studies there is no development in the evidence of how this evaluation relates to the outcomes. Does this prevailing feature of the cases highlight the difficulty of formally “measuring” the concept of entrepreneurship development as a real outcome of a learning experience? And if so, what strategies are potential responses to this difficulty?

Finally, across the range of evidence presented here, are there features which provide ideas of a framework in which a specification might be developed or are there significant elements missing? What evidence is available which demonstrates that the practices described are in fact ‘good practice’?

³ See the range in the South East Asia summary –which vary from knowledge to behaviours.



Developing Entrepreneurial Graduates

Briefing Note 4
March 2008

NESTA



Summary Note from Panel Meeting 1

The first meeting provided an opportunity for the panel to meet each other and the project team, discuss the detailed Terms of Reference for the scope of the project and deal with the five themes covered in the first round of Briefing Notes sent to panel members in advance of the meeting.

Five strategic themes

The meeting was framed around the five themes outlined in Briefing Note 1 that will inform the development of the specification of requirements as the outcome from the project, and will focus on:

1. What **policies** should be adopted at a national, regional and institutional level?
2. How do we ensure **institutional support** in universities to champion entrepreneurship education with a clear vision and clarity about its outcomes, impact and value?
3. What models and **modes of engagement** for staff and students are needed to ensure that the design of the educational experience allows for innovative pedagogy and a diversity of learning outcomes?
4. How do we address the current **fragility of funding** and resources needed to mainstream this activity across campus at all universities nationally?
5. How do universities attract, train and reward **entrepreneurship educators** to ensure appropriate learning outcomes are achieved?

This note provides a synopsis of the Panel Meeting No. 1, and serves not as a minute of discussions but a summary of the key themes covered and issues raised at the meeting.

Project objectives

The current body of evidence shows several *dimensions of variation* in the configuration of entrepreneurship education in the university sector. The objective of the DEG project is to develop a pilot specification for encouraging the development of more entrepreneurial and enterprising graduates at UK universities.

The outputs for the project will include: (1) a fully populated specification of requirements for entrepreneurship educators to implement a campus-wide strategy in their university (2) a summary note for Vice Chancellors on the specification (3) a report addressing the five strategic issues noted above for government policy makers and other stakeholders.

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Overall purpose of the project?

The discussions highlighted two possible leverage points around which to frame the specification of requirements being developed:

- Addressing institutional culture change – a framework for university Vice Chancellors to consider the university of the future as the entrepreneurial university.
- Addressing the student learning experience – a framework focused on students and helping them create their own futures.

Regarding culture change, who must change – the government or universities as institutions? If the project is about culture change the most obvious intervention point is at a faculty level – they are the institutional memory of universities, they ‘stay forever’. If the project is about students, then we need to pitch the argument at the teaching and learning environment and develop evidence to bring about change to the practice of teaching and learning, to the role and contribution of universities to developing entrepreneurial (new venture focused) and employable (intrapreneurial) graduates who are innovative, creative thinkers, knowledge centred and entrepreneurial.

Taking a student centred approach

“Develop the person, develop the mind” a mantra proposed to ensure changes are centred around the student – this requires changes to teaching approaches, quality assurance (QA) protocols, pedagogy, assessment and grading systems to cultivate the types of skills and experiences that will develop more entrepreneurial graduates.

Table 1: Contrasting learning approaches

Learning-focused	Knowledge-focused
Personal development	Off-loading academic expertise
Problems-based approaches	Compliance with QAA protocols
Team learning	Influenced by reward/promotion structure
Real world	
Experiential	

The central challenge for the student learning experience – encourage students to re-learn from experience, explore theory and practice and focus on commercial awareness and new venture creation skills – focus on experimental, discovery, lab-based approaches with strong links to practitioners via studio, experiential and effectuation models.

Experience from KaosPilots has shown that the student types that are entrepreneurial are generally not business studies students. Very often ‘business’ per se is often alien to typical KaosPilots students – they find purpose in something that offers a gateway to their future, and that in turn requires them to be entrepreneurial. Hence it was suggested that traditional business school models are not relevant and do not generate entrepreneurial characteristics as they often involve *academics off-loading business models* on students as ‘packets of knowledge’. This theory-based approach often means students do not experience the ‘lifeworld’ of the entrepreneur through meeting real entrepreneurs on their course work or being practically exposed to them through projects, placements and credit bearing internships.

This remains a challenge for many universities – where they are not situated in the domain of engaging with business, or where they are, this knowledge exchange often does not permeate into the student learning experience as its contained within the knowledge transfer and research domains. The experience of business very often does not inform module design, assessment regime, and the transfer of tacit knowledge through links to the world of work. There is a structural disconnect between business and the learning aspects of higher education. Perhaps there are lessons to be learnt from the creative industries where learning is often

situated within the workplace through student projects in the curriculum that focus on 'live issues' from client studios.

Disconnecting entrepreneurship and money

As an aside, it was noted that the KaosPilots programme has disconnected entrepreneurship and 'money' through embedding the learning of entrepreneurship in 'values'. In addition, adopting a broad definition of entrepreneurship – *defined as opportunity identification and value creation* – students are not disengaged by an open-ended articulation of the concept. By centering attention on the broader aspects of the definition, i.e. describing it as 'channelling creativity and innovation to create value in the community', students are able to take a values-based approach. This situates their learning within a framework that allows them to shape the meaning of it for themselves.

Lessons – we need to encourage UK universities to adopt broad approaches such as this, and thus allow for an evolutionary change in the impressions of entrepreneurship and the place of entrepreneurship education at the centre of the university and its relevance in all academic departments. We need to find and use **examples of academic entrepreneurship** to illustrate and situate entrepreneurship as it is relevant to a range of different subjects by case studies, pictures, storytelling relevant to philosophy, bio tech, drama etc.

Requirements for a student centred approach

If we develop a model that is framed around the student experience there are any number of factors we have to take account of. Briefing Note 1 highlighted the importance of identifying clear modes and model of engagement for academic faculty and students to ensure that the design of the educational experience achieves these required outcomes. Experience from Sweden, Denmark, the US and the UK shows that securing visible institutional support from the Vice Chancellor and senior university management sends a strong signal to the campus as a whole. Beyond this, ingredients for such an approach would need to address the following issues, among others:

- Allow for experimentation, discovery, practice, theory, peer to peer co-learning – here is it important for both academic staff and students to be involved in the assessment process, e.g. students are required to record their experiences from learning in practice and to demonstrate the knowledge and learning they have acquired.
- Use multi-disciplinary approaches to ensure cross-learning – involve students and faculty from a range of departments.
- Ensure the learning contract is flexible 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.
- In order to achieve culture change, a comprehensive cross-campus model will rely on students being engaged in the design and propagation of the same set of principles that define the learning of entrepreneurship and thus avoid academic 'turf wars'.
- **Situate or contextualise entrepreneurship around the notions of innovation, creativity, collaboration, problem-solving rather than solely focused on the notions of new venture creation.**

The panel highlighted the importance of **visible leadership** from the institution as a key ingredient to achieving a change in the cultural values of the university as an institution. Hence the framework specification needs to develop:

- a) evidence of the importance of this agenda for university Vice Chancellors;
- b) a singular message about the relevance of entrepreneurship education to the student experience as a fundamental outcome of a university qualification; and
- c) practical mechanisms to embed the broad experience of the 'lifeworld' of the entrepreneur, an understanding of business, and the generic employability skills for the

workplace, i.e. team working, communication skills, commercial awareness and problem solving.

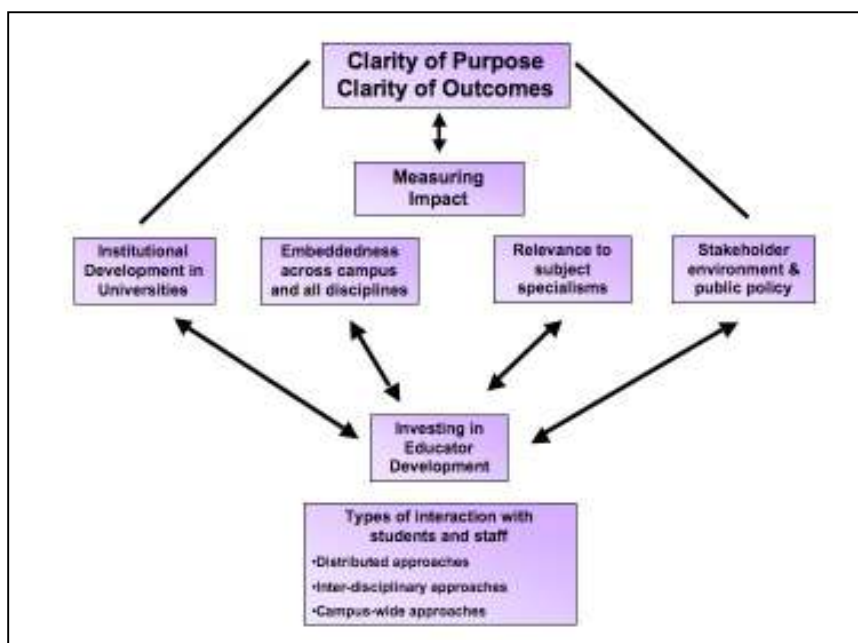
The key message for universities is that adopting the ‘entrepreneurship education mantra’ is crucial to help **reposition the role of universities in the knowledge economy** regionally, nationally and globally. The DEG project may wish to consider developing a checklist for university Vice Chancellors of what constitutes the ‘entrepreneurial university’ and what key how to’s need to be considered when designing an institutional approach.

It is common knowledge that providing student placements with local companies as part of the curriculum (a) enhances the student learning experiences (b) provides universities with a vehicle to build links with business and (c) over time builds a community of practice of companies, academics, students and the university to build local and regional economies. Notwithstanding this, there may be a need to give consideration to a more fully rounded re-conceptualisation of the principles and values attached to higher education, and hence change our understanding of the university in the 21st century knowledge intensive economy.

Key challenges for the design brief

Having outlined a number of tactical and operational aspects related to a possible framework specification for entrepreneurship education in UK universities, the panel members considered a number of overarching themes which would govern the design brief for the next stage of the project. Although discussed in great length at the first panel meeting, the summary below provides an indication of the some of the outstanding issues to be covered in the ongoing deliberations of the panel:

Figure I: A proposed design brief



- Positioning entrepreneurship education in HEIs – the key challenge is one of ensuring **parity of status** for entrepreneurship educators, many of whom sit at the interface of theory and practice, and thus as ‘praxitioners’ they have no status in universities. Changing this through reconfiguring staff award and remuneration systems is needed to achieve a step-change in how universities value these types of staff in the institution.
- Of the five challenges outlined in Briefing Note 1 the issues of greatest primacy in the design process has to be – **can universities deliver this agenda?** Is it an activity that can be central to the raison d`etre of the modern 21st century university in an environment in which these institutions are already faced with many other pressures?

Related to this is the question of scale – if one considers the current levels of activity across the UK, the lessons from the Kauffman pilot campuses in the US, and the experiences from Scandinavia (35 students on the KaosPilots programmes), is this activity scalable?

- Given that designing entrepreneurial organisations takes vision, leadership and active management, how do we go about ensuring that university Vice Chancellors **understand the framework requirements** for a cross-campus approach to entrepreneurship education at a strategic, tactical and operational level? How do we equip them with the tools to drive this agenda into the ethos and culture of the organisation so as to encourage entrepreneurial behaviour by students and staff?
- Given the experience from the US which shows that bringing key members of faculty on board is a crucial requirement for a cross-campus approach, how do we frame entrepreneurship education so that it demonstrates its **relevance to academic faculty**? How do we go about changing the reward and remuneration frameworks within higher education to recognise the entrepreneurial behaviour of academic faculty and (business facing) practitioners? How do we ensure the economic impact indicators adopted by the UK Research Councils (RCUK) accommodates entrepreneurial outcomes? There is also a need to give greater recognition to academic links with industry and realise that very often these links can take any variety of forms – using university research to develop solutions to industry specific problems, spin-outs and licensing of university technology, research contracts, business relationship management, student placements (Knowledge Transfer Partnerships). How do we give entrepreneurs status in universities – as academic adjuncts, as visiting fellows, as entrepreneurs in residence? Also, how do we ensure academics go on placements as industry fellows to ensure knowledge exchange operates in both directions?
- Finally, there is the issue of ensuring that the **curriculum is linked with industry** and reflects the iterative and complex manifestations of entrepreneurial behaviour – we need to move the experience of entrepreneurship beyond the business plan. How do we adopt the approach found in the education sector for the creative industries which creates links to curriculum development and the student experience through ongoing engagement with business (a relationship based approach)? This approach provides the student and the academic with ‘real’ exposure to the creative industries, ensures that the learning of a craft or skill is directly related to its application and weaves a seamless interface between theory (academic curriculum) and practice (entrepreneurial action).

The role of government?

Research by the NCGE has found that the institutional behaviour of HEIs is driven fundamentally by government funding. Policies adopted by government departments and the university funding councils are crucial to the end product – the student experience. Hence ensuring *a positive unifying role for government* as a catalyst of the end objective (embedding entrepreneurship education in universities) must be clearly articulated for the DEG project to achieve its objectives. This may require a statement from the project of its ‘common thoughts’ about entrepreneurship education and how it contributes to the high level purpose/role of universities in society. This will require (a) a clear articulation of the purpose and outcomes of entrepreneurship education; (b) a demonstration of how it fits with the raft of current higher education funding objectives; and (c) a clear illustration of the link with government policy. If this was based on the assumption that the objective is for all students to have the opportunity to experience entrepreneurship education, then there are a range of challenges to address:

- We need more entrepreneur educators, more training for educators and a vibrant network of entrepreneur educators.
- We need to embrace curricular innovation from other subject disciplines. To date there is little agreement about the pedagogy of entrepreneurship education, with the

NCGE having, for example, mapped out 36 different pedagogies. Greater effort is required to learn from the Higher Education Academy Subject Centres and the Centres for Excellence in Teaching and Learning (CETLs).

- We need institutional leaders to champion entrepreneurship education as a cross-campus opportunity available to all students and academic faculty.
- We need to address the issue of scalability and the level of change in institutional culture which is realistically achievable. Here the panel considered 3 possible models: (1) small-scale change (at faculty level) to offer the experience to more students; (2) high level awareness change (using the Times Higher award for entrepreneurial university of the year) to change perceptions of the relevance of entrepreneurship education; and (3) structural change through changing the research assessment framework (RAE/REF), benchmark quality assurance statements on entrepreneurship education (QAA); and changing funding council models for allocating funding to universities (HEIF/RCUK).

Ingredients for the specification framework

The Developing Entrepreneurial Graduates (DEG) project requires the expert panel and the DEG project team to develop a statement of requirements for entrepreneurship education in UK universities. Aside from exploring the five themes from Briefing Note 1, the panel also discussed the constituent parts of the framework:

- **Institutional development** – tactics for embedding entrepreneurship education as a cross-campus endeavour and as a part of the institutional culture. Linked to this are both learning modes and learning outcomes and the need for educator development and capacity building.
- **Institutional scope** – applicable to both students and academic faculty, to the research and teaching domains and outwards to the local and regional economy.
- **Stakeholder engagement** – key to the success of the project is positive endorsement from government policy – the latest iterations of policy on innovation, science and enterprise have provided both policy support and funding for this agenda in the education system.
- **Clarity of purpose and clarity of outcomes** – greater consideration is required of what outcomes, what outputs, what impact is expected from this activity and what metrics will be used to measure impact.

Next steps

- DEG project team to develop the next series of Briefing Notes for the expert panel to consider – the focus will be on (1) taking forward the discussions from the first panel meeting and (2) developing an outline of the statement of requirements for the design brief for the next panel meeting.
- Expert panel to identify 3 to 4 articles or reports that they have authored or which they consider authoritative in the area of entrepreneurship education in their country and field of experience to *email to Keith at the DEG project team*.
- Expert panel to provide input to DEG project team to populate the draft specification of requirements – to be outlined in Briefing Note 5.
- DEG project team to develop a summary map of the higher education system to identify and explain the key stakeholders in the system, to help the expert panel understand the UK system.



Developing Entrepreneurial Graduates

Briefing Note 5
April 2008

NESTA



Developing a Requirements Framework

Purpose

This Briefing Note describes and illustrates the structure under which we propose to develop a statement of requirements for an approach to developing entrepreneurial and enterprising graduates. It takes the deliberations from the first panel meeting a step further by outlining the constituent parts of a framework within which the statement of requirements can be developed. This will be produced as the key output of the current partnership between NESTA, NCGE and CIHE through the deliberations of the expert panel constituted by the partnership.

Background and Interpretation

The first panel meeting on 14th February included a number of discussions and contributions from the panel on the rationale for universities in “Developing Entrepreneurial Graduates” and the manner in which these should perhaps be incorporated into the overall mission and strategy of universities at an institutional level. From these discussions we can identify as a starting point a number of dimensions of variation which we believe are relevant to the development of entrepreneurial and enterprising graduates. These apply to different types of institutions, different domains for entrepreneurship education, and different types of activity (in and out the curriculum) and will influence the extent to which universities are able to develop or encourage enterprising behaviour and skills.

The discussions revealed the importance of the **culture of the institution** (including types of behavioural norms of the institution) on the propensity for developing the spirit of enterprise in both students and faculty. One outcome of this discussion for the project team is the realisation that developing entrepreneurial and enterprising graduates (in whom enterprising behaviour is a natural tendency, rather than a set of skills “grafted on”) requires an enterprising institution. It would be self-defeating to try to identify institutions which would embrace the type of student experience we are endeavouring to develop by providing a specification of features they should have but which do not ‘fit’ with the characteristics of that institution. The project team has kept the focus on the *five themes* outlined in Briefing Note 1. It is within these dimensions of variation that the key criteria important to the development of enterprising graduates can be developed. Hence the approach adopted is one of developing criteria for the provision of entrepreneurship education that satisfy these dimensions of variation.

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This completed set of dimensions and the associated criteria will constitute a key output of the panel's deliberations. We will stimulate these further deliberations by providing a first version of these as an outline framework, partly populated with criteria as an illustrative starting point, which we have developed from the first panel discussion. We will invite the panel members between now and the second panel meeting to provide responses in two ways:

- (i) commenting on the dimensions of variation included to date and suggesting others where appropriate based either on the panel member's own experience or literature which can be identified for the project team and the panel; and
- (ii) enriching and commenting upon the sample criteria, similarly including a rationale for these comments of conclusions from either experience or literature as appropriate.

The second panel meeting will then take a revised form of this document and use it as input material for the discussions scheduled on the agenda.

Dimensions of Variation

These represent the potentially important characteristics which we have gleaned from the discussions at the first panel session and are framed within the five themes guiding the development of the statement of requirements. We believe these are important ingredients for the development of entrepreneurial and enterprising graduates. They constitute the selection criteria against which we would expect to test any entrepreneurship education programme. Some indications of how those selection criteria might be expressed together with some questions which arise concerning these are given under each heading outlined below. They start with some general "high level" criteria about the organisation mission and culture and become more specific to the enterprise and entrepreneurship context. Their spread deliberately embraces institutional culture change, the student learning experience and the interaction between them.

These dimensions of variation operate across the continuum of the strategic, tactical and operational levels outlined in Briefing Note 1 – and provide a way of ordering the issues in the framework specification.

1. Clarity of purpose and outcomes

What do we mean by entrepreneurial and enterprising graduates and what does this mean for a university? One way of approaching this as a criterion is to state our expectations that an "enterprising graduate" would be equipped to fulfil their own potential in self motivated:

- (i) contribution to the economy and society (through, for example, the development of new business ventures);
- (ii) affecting change;
- (iii) addressing major societal challenges;
- (iv) development of their own capital, both economic and social.

If we adopt the broad approach suggested at the first panel meeting, i.e. entrepreneurship education "*as being concerned with the personal attributes, behaviours and skills associated with the creation of value by applying resources in order to innovate*", we need to be able to frame this in such a way that it helps universities reposition themselves in the knowledge economy. Clarity of purpose is also about relevance – the key challenge here is demonstrating the relevance of entrepreneurship education in a university setting, to both university Vice Chancellors and

academics out with business schools. In age of uncertainty and complexity in the external task environment facing universities, what are the key statements of evidence to place before universities to demonstrate the purpose and relevance of entrepreneurship education in a globalised world?

We would like to invite the panel to reflect upon the ways in which these objectives influence a conclusion on what should be included in the curriculum and the learning experiences under “Learning Objectives” (see below) so that there is a logical framework under which an explicit statement of the objectives clearly translates into learning objectives. Perhaps one way of addressing this is to seek to understand the university’s motivation for embarking upon any changes needed to implement the strategy for DEG and then seek to understand the university’s own interpretation of those changes. The university should be able to position these objectives and the way in which they are to be met effectively against the goals and priorities of key external stakeholders.

In reflecting on and agreeing the objectives and then developing the criteria from them we will be able to provide a coherent framework in which programmes may be developed which will benefit from past experience and build upon it. These also need to be framed in relation to the activities of other stakeholders – the responsible government department, the Department for Innovation, Universities and Skills (DIUS), the funding agencies, the Research Councils and the Technology Strategy Board (TSB). The nature of the way in which the institutional embedding will be achieved should impact directly on the innovation and knowledge transfer agenda.

Questions:

If it embraces these as objectives, how does the university differentiate these objectives against the role of universities more generally? How do we accommodate emphases placed on the different impacts or the extent to which individuals may avail themselves of the opportunities?.

2. Institutional Embedding and Funding

The objective is to embed enterprising behaviour in the graduate and make this available to the extent to which the aspiring graduate determines, it needs to feature as a part of the life of the institution and not exist as “compartments” in which “enterprise” is taught as a separate subject. This objective impacts upon the whole culture of the university. To what extent is such a culture embedded, what changes to (e.g.) personnel and recruitment policies might be needed and how does the university intend to develop such a culture, for example, by starting at faculty level? The sense of criteria extends to parity of esteem – where staff are specifically engaged in support of entrepreneurship and enterprise activities, the nature of their contracts, promotion prospects and recognition should promote parity of esteem with research faculty.

Institutional embedding includes or requires that the funding model be likewise embedded; the institution should be satisfied that funding for all activities can be developed on a permanent or recurrent basis rather than reliant on temporary or initiative-based funding. Too often we have seen funding set asides for enterprise education not bringing about fundamental pedagogical change to embed the experience in the HE culture¹. “Permanent” or “recurrent” funding refers to a criterion that the funding is on the same basis as “normal” teaching; for example block grant should be regarded as a permanent source, tuition fees are a recurrent source – the exact source changes but the nature of the source does not. This is consistent with the idea of integration within the curriculum (see below).

¹ Allan Gibb: ‘Towards the Entrepreneurial University: Entrepreneurship Education as a lever for change’, NCGE, 2005

The role of the leadership team (Vice Chancellor and executive team, the Senate or equivalent) and Alumni should be explicit in achieving this embedding.

Questions:

The panel are requested to provide input from their experience about how they went about securing institutional support for entrepreneurship education; what were the key messages that persuaded their key stakeholders; what strategies were used to secure ongoing funding for this activity?

3. Institutional Scope

Who are the key institutional stakeholders in the embedding process? How will the institution ensure that all staff and faculty are embraced? The university should explicitly recognise and take steps to realise the other benefits it might see from such a change – for example in terms of engagement with business and the community. It is argued that the entrepreneurship education domain should be an integral part of a university's engagement strategy with business and the community. This also extends to the learning contract with students; ensuring that students are prepared for the world of work through focused careers development, student placements in entrepreneurial companies, and through team-based project work that involves local companies.

Ideally members of faculty (including research students and post docs) should be able to engage in team-based projects with students and participate as full members of the team. This is a reflection of the real world in which resources may be harnessed by entrepreneurs irrespective of their formal status; it would also encourage and reinforce the embedding of the culture in the organisation. This should be reflected in the multidisciplinary nature of team-based projects since real world problems and opportunities are inherently multidisciplinary in nature.

Questions:

The panel are asked to consider how we ensure that entrepreneurship education sits alongside and contributes to engagement of universities with business and regional development community via knowledge exchange schemes, the commercialisation of intellectual property, student placements and links with community to address local challenges? What evidence is there of schemes such as those outlined above? How do we go about re-designing universities so that they stimulate entrepreneurial behaviour?

4. Learning Objectives

How well are the learning objectives for the enterprising graduate expressed in terms of:

- (i) behaviour – we could draw upon effectual thinking / behaviour to describe the types of behaviour and when they are appropriate in different circumstances; how will the graduate be encouraged to recognise these?
- (ii) self discovery;
- (iii) self-direction and resource investigation – including stakeholder identification and relationship development;
- (iv) project management;
- (v) team management;
- (vi) “how to” aspects of enterprise development and management including ‘business school’ disciplines and when they are needed.

Sarasvathy² notes the difficulties of incorporating the iterative realities of the lifeworld of the entrepreneur in the formal curriculum. Notwithstanding this, the principles underpinning the effectuation model are grounded in personal discovery, in experimentation, in a process of unlearning and re-learning, and in self development as part of the desired outcomes. To pick up on some of the issues in terms of outcomes from Briefing Note 2, we need to answer these questions – to what extent should/can the challenge of embracing effectuation in the pedagogy of entrepreneurship be met? What should the desired learning outcomes be, either in the form of (a) the development of the entrepreneur or (b) the understanding of entrepreneurship? How might formal taught material be combined with experiential learning in positioning causal and effectual reasoning with each other?

Questions:

These are general headings – can we develop these further from a combination of the Alan Gibb matrix³ plus the direct experience of the panel members plus (perhaps) some of the Sarasvathy literature under (say) the behavioural aspects? How do we demonstrate explicitly the relevance of these to academic faculty in the context of a learning focused approach?

5. Learning Approaches and Modes

These should be learning and experience focused rather than knowledge focused. For the learning objectives there will be a mix of modes (e.g. taught curriculum, experiential through individual and team work, external engagement, self reflection); the learning experience should provide for integrated provision of a mix of these (for example, the experiential elements should be integrated with taught “how to” elements).

Individuals should be able to participate in:

- (i) individual learning;
- (ii) structured learning as part of a group (e.g. class) activity for the purposes of acquiring functional knowledge on business (e.g. market research, business plans, financing) from typical ‘business school’ training;
- (iii) self-directed learning (i.e. the student has the task of identifying the learning objectives needed to deliver a project and ways in which they might be reached); placement activities should be key to achieving these ends;
- (iv) team based activities which should progress through projects which are internal and set (no client), external and set (client directed) and external and self directed (i.e. objective identified by the team) *including obtaining the resources needed to address it.*

Teams will form to address multidisciplinary problems and opportunities and should encourage how these may be formed from students and faculty on an organic and emergent basis. Assembly of teams and negotiation of roles is part of the learning process. The KaosPilots experience suggests that students should be encouraged to build from individual experience through team based work to external engagement, and learn from experience by addressing individual project elements themselves and then repeating these as part of more integrated projects on a team basis, allowing for self reflection and self-directed learning.

² Saras Sarasvathy (2007) ‘What makes Entrepreneurs Entrepreneurial?’, Darden Graduate School of Business, University of Virginia

³ Allan Gibb: learning outcomes matrix outlined in appendix attached

Questions:

The final requirements framework might suggest how these modes might be combined to address the learning objectives. Where there are what might first appear to be common elements (e.g. “how to” aspects of enterprise development found in typical ‘business school’ disciplines) how might these be addressed? How might they be positioned against the effectual modes of behaviour?

How do we go about embedding the teaching ‘for’ entrepreneurship rather than teaching ‘about’ entrepreneurship? How do we ensure that the practice of acquired knowledge or the acquisition of knowledge through practice reinforces academic concepts?

The panel is asked to provide input on:

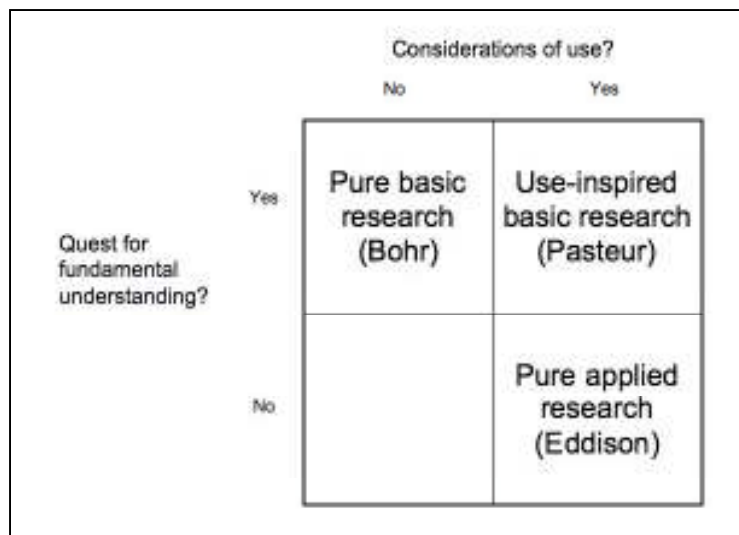
- How to integrate knowledge and experiences (within faculties and departmental areas, between various social science disciplines, between fields in arts and science and between tacit and explicit knowledge)?
- How to embed opportunities for experiential learning as part of the student experience?
- How to ensure space in degree programmes for testing explicit (academic) knowledge in practice – more time for reflection and learning by re-doing? How to shift the focus from what is taught to how things are taught?
- What can we learn from innovations in assessment and accreditation procedures elsewhere?

(Questions adapted from Gibb, 2005)

6. Integration with Curriculum

Universities will be challenged to integrate experiential learning with the taught curriculum in a scaleable fashion; the panel deliberations to date suggest that this should be done by identifying elements of taught and experiential curricula which are appropriate to all students in any specific curriculum (these might vary on a subject by subject basis). This might, for example, include specific considerations of use (for example entering the Pasteur quadrant in the Stokes model from both the Bohr and Eddison quadrants) as a specific curriculum element in science subjects and (say) the economic and technological implications of this.

Stoke’s model on Research



Adapted from: Stokes: *Pasteur’s Quadrant: Basic Science and Technological Innovation*, 1997

Stokes took different examples of scientific discovery and their exploitation and plotted them in this matrix to demonstrate that research is inspired by a search for understanding as well as consideration of use and various combinations thereof. Bohr's search for the structure of the atom had no immediate considerations of use in mind; Eddison's discoveries were centred on commercial exploitation; Pasteur blended the quest of fundamental understanding and a quest for applied use.

With this in mind, universities might be challenged and encouraged to draw upon the experience in the Creative Arts in which the student experience is inherently entrepreneurial as a result of direct engagement with the world outside the institution through student placements or working on live projects with business clients.

There should or could be a range of options as to how far each individual (student) could progress within the enterprise specific elements of taught and experiential learning; thus leaving the enterprise specific elements of their studies at a point which they deemed appropriate for themselves. These levels might match the increased engagement with the enterprise agenda indicated by the different types of team-based activity. Thus the degree of external engagement would vary from individual (e.g. placement based) through to self-directed external teams depending on the individual's aspirations and abilities.

Questions:

How do we create (self?) selection criteria for inclusion or “divergence” from the entrepreneurial focus “in courses”? How will the original selection criteria change? Is this achievable within the UK system with its rules of entry into university and the narrow composition of degree programmes?

7. Evaluation

Challenges include:

- (i) Internal evaluation – providing effective mechanisms for a formative and summative evaluation of the course components and the student by the student, which will include an evaluation of the student by members of the team.
- (ii) Evaluation of the student by the institution, how (i) will contribute to that and how the enterprise specific elements will be assessed and the assessment subjected to appropriate quality assurance (QA).
- (iii) How will the institution provide for a transferable credit based system especially for the experiential elements? What are the implications of Bologna?
- (iv) How will the programme be subjected to evaluation by outcomes given that some evidence (e.g. entrepreneurial behaviour in the form of new business ventures) may materialise a decade or more after leaving university; are there any unambiguous proxy indicators which are more immediately accessible?

The evaluation of projects should encourage a values based approach rather than an economics based approach in order that the outcomes might generate the widest possible range of societal benefits.

In closing, the panel is asked to take the proposed models for the ‘entrepreneurial university’ and the set of ‘learning outcomes’ in the attached appendices as inputs from which some of the criteria might be developed⁴.

⁴ Taken from Allan Gibb's paper on the Entrepreneurial University

In this respect it is evident that students see the range of entrepreneurial behaviours as set out in 6. as central to their future careers and social life, irrespective of whether they immediately start businesses or not. They can be viewed as part of the preparation of students for life long learning.

There will also need to be changes in staff rewards and status systems to encourage those who engage, and have high credibility, with the business and wider stakeholder community. This in turn demands enhanced mechanisms for support of ongoing social interaction between academics and students and particularly entrepreneurs. As a basis for the above there will be a need to audit existing practice and the potential for movement towards the kind of model the university wishes to explore.

In this respect three alternative organisation models for the Entrepreneurial University (which can be seen as developmental) can be suggested.

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

The **Optimum Fully Integrated Model**, with 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.

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.
- Development of specialist entrepreneurship programme offer to all departments – some department staff training.
- 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.

A Benchmarking Template of Potential Key Outcomes

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: <ul style="list-style-type: none"> - 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
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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: <ul style="list-style-type: none"> - 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
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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: <ul style="list-style-type: none"> - 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
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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: <ul style="list-style-type: none"> - 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'
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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	<p>To what degree does the programme take students through:</p> <ul style="list-style-type: none"> - 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)	<p>To what degree does the programme build the capacity to:</p> <ul style="list-style-type: none"> - 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	<p>To what degree does the programme help students to:</p> <ul style="list-style-type: none"> - 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	<p>How does the programme help students to:</p> <ul style="list-style-type: none"> - 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