



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:

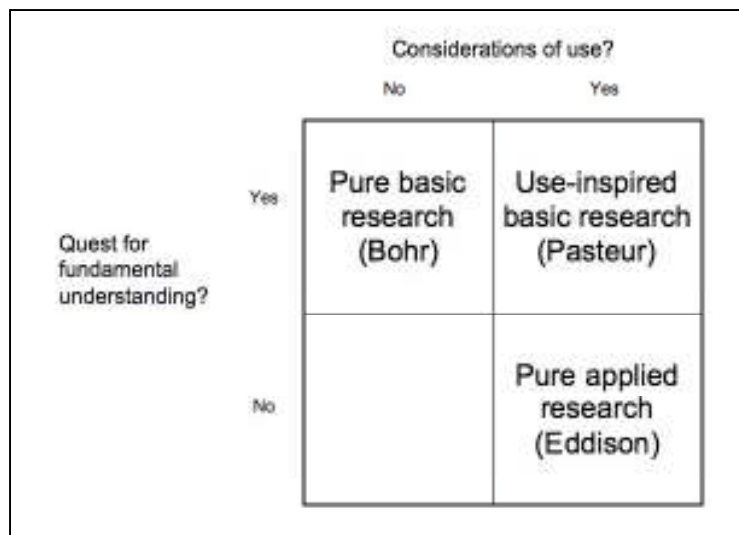
- How to integrate knowledge and experiences (within faculties and departmental areas, between various social science disciplines, between fields in arts and science and between tacit and explicit knowledge)?
- How to embed opportunities for experiential learning as part of the student experience?
- 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