



# Learning about Enterprise and Entrepreneurship in Science and Technology Subjects

Higher Education Academy  
Subject Centres

Workshop report

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# Executive summary

This report details the main outcomes from a workshop focused on **enterprise and entrepreneurship learning in science and technology subjects** and involving the Subject Centres for Bioscience, Engineering and Information & Computer Sciences. The workshop was held at Aston Business School in Birmingham on Thursday 4<sup>th</sup> and Friday 5<sup>th</sup> May 2006 and was facilitated by Iain Nixon of **The KSA Partnership**.

The key findings were:

- a) Entrepreneurship and enterprise were seen as being different, though linked
- b) Enterprise was defined along the lines of
  - *“Enterprise is about the creation of value through the pursuit of opportunity and accessing resources beyond those currently available”*
  - *“Enterprise is about turning ideas into working realities”*
  - *“Enterprise is having ideas, doing something about them, taking advantage of opportunities to bring about change. Enterprise is about making things happen!”*
- c) Enterprise can be undertaken in various different areas:
  - *Ethical enterprise*
  - *Social enterprise*
  - *Economic enterprise*
  - *Environmental enterprise*
  - *Technological enterprise*
  - *Political enterprise*
- d) Entrepreneurship is seen as a subset of enterprise (economic enterprise) and is less generally accepted within disciplines and less applicable to all students
- e) Enterprise knowledge and skills include:
  - *Ethics and integrity*
  - *Reputation*
  - *Creativity*
  - *IPR*
  - *Risk management and assessment*
  - *Innovation*
  - *Opportunity recognition*
  - *Commercial exploitation*
  - *Finance and accounts*
  - *Venture capital and raising finance*
  - *Business planning*
  - *Marketing and selling*
  - *Public relations*
  - *Leadership and visioning*
  - *Team building*
  - *Project management*
  - *Human resources*
  - *Self awareness*
  - *Health and safety*
  - *Presentation skills*
  - *Negotiation*
- f) It should be recognised that students will need a level of confidence and feel comfortable enough in their ‘environment’ to apply these skills in the first place. The outcome of developing and applying these skills in context will, however, be greater levels of self confidence (or self efficacy)
- g) Many of these skill are already taught but are not explicitly linked to enterprise

h) In moving forward specific areas for attention include:

- *Disseminating the evolving view and interpretation on enterprise and entrepreneurship*
- *Encouraging greater levels of cross-disciplinary team working throughout all academic years*
- *Developing an enterprise matrix to be primarily used by students to help them identify the enterprise skills they are developing*
- *Preparing 'guides' and exemplars of practice to support this area of learning*
- *Providing staff training to build capacity and capability.*

# 1 Introduction

The Higher Education Academy's Centre for Bioscience secured funding for a collaborative project focused on developing thinking on enterprise and entrepreneurship in higher education. The project brought together the Centre for Bioscience with the Subject Centres for Engineering and Information & Computer Sciences in a workshop which aimed to:

- Explore interpretations and meanings of enterprise and entrepreneurship in order to shape a consensus definition which could be explained to the different constituencies in an understandable way
- Identify how enterprise and entrepreneurship is currently being taught and share and devise strategies for developing and embedding practice
- Share information on what learning and teaching resources exist and where resources are needed
- Identify interesting ideas and practice and capture these in the form of case studies and vignettes.

This short report details the main outcomes from the workshop held at Aston Business School in Birmingham on Thursday 4<sup>th</sup> and Friday 5<sup>th</sup> May 2006. The workshop was facilitated by Iain Nixon of **The KSA Partnership**.

## 2 Propositions

To stimulate a debate about what enterprise and entrepreneurship means and to determine where the boundaries lie in the different subject communities, a number of propositions were put before the participants. The propositions were:

### Enterprise and entrepreneurship propositions

#### Proposition 1

*Being enterprising* is about having the confidence and capabilities to turn ideas into working realities

Becoming an enterprising person is widely contextually valid

*Entrepreneurship* is one outcome of being enterprising

*Being entrepreneurial* means using enterprise skills to create new business, new businesses and 'can do' organisations and services

#### Proposition 2

The concept of *entrepreneurship* is broader than the economic or business school model

It encompasses social and community enterprise, not-for-profit, intrapreneurship, commercially and profit led, freelance and self employment

#### Proposition 3

The values and behaviours associated with *enterprise* are generic and widely accepted and applicable

Enterprise has 'hijacked' a set of common values generally attributed to other terms notably creativity, lateral thinking, opportunity-spotting, risk taking etc

#### Proposition 4

*Being creative* is one of the skills associated with being enterprising

Enterprise involves being able to generate and work with ideas, design solutions, and exploit value from the solution

#### Proposition 5

*Enterprise* fits better than entrepreneurship for many subjects

Change is most effective when the interpretation of enterprise and entrepreneurship is aligned with inherent values of the subject

Supporting students to become more *enterprising* enables them to become better learners

Additionally, **KSA** presented thinking on enterprise skills and traits to enable participants to determine the extent to which there are a set of discernable skills and traits, and whether they can be developed in practice.

### **Enterprise skill and traits**

#### **Ideas orientation**

Able to think creatively, spot and select ideas which offer opportunity

#### **Purpose and belief**

Having a positive attitude towards risk, belief, drive and determination

#### **Relevant skills and understanding**

Having an understanding of, and are skilled in the area / market you work in

#### **Organisation and management**

Able to put ideas into practice

#### **Partnering and venturing**

Able to work well with people and get them around the idea

#### **Opportunity awareness**

Having a wide horizon and understanding context and markets in yours and related areas

#### **Resourcing**

Able to secure and use resources effectively to make your ideas work

### 3 Defining enterprise and entrepreneurship

Each discipline group presented back their thoughts on enterprise and entrepreneurship, and from this similarities and differences were identified. The three subject communities felt there was sufficient similarity to be able to agree a consensus definition.

The Subject Centres felt that *enterprise* is more acceptable and applicable to their respective disciplines, particularly given that the discipline spectrum stretches from the pure to the applied sciences. It is a less bitter pill to swallow!

#### Defining enterprise

*"Enterprise is about the creation of value through the pursuit of opportunity and accessing resources beyond those currently available"*

*"Enterprise is about turning ideas into working realities"*

*"Enterprise involves being able to generate and work with ideas, design solutions, and exploit value from the solution"*

*"Enterprise is having ideas, doing something about them, taking advantage of opportunities to bring about change. Enterprise is about making things happen!"*

By comparison *entrepreneurship* was felt to have negative overtures - it relates (too) closely to business and can be seen as a social and environmental pariah. Some students may not wish to be entrepreneurial while all students can be enterprising in one way or another. If entrepreneurship were to be accepted, it would tend to be in the more applied sciences. Participants did recognise the need, at some point, to define entrepreneurship in the context of their disciplines.

*Enterprise* operates in different domains and is widely contextually valid. As such enterprise cuts across **all** disciplines although the emphasis will vary. Boundaries would be determined by ethical, social and professional biases and constraints. These



domains perhaps provide the means by which to enable practitioners to engage with the concept. Some of the potential domains (or strands) of enterprise are:

- Ethical enterprise
- Social enterprise
- Economic enterprise
- Environmental enterprise
- Technological enterprise
- Political enterprise.

The business environment is only one context in which enterprise applies. Enterprise is therefore critically important to learning as well. Supporting students to become more *enterprising* enables them to become better learners.

The pedagogy of enterprise learning tends to involve a process characterised by:

- Self directed learning – provide opportunities for learners to engage
- Experiential activities – learning by doing
- Application of learning – links to ‘real world activity’
- Critical reflection and articulation – which values learning from failure.

As a consequence it was felt that the individual learner benefited from enterprise learning through building their self efficacy and by developing their knowledge and skills. Participants thought that it was possible to discern the knowledge and skills associated with enterprise. Annex 1 provides a summary of the knowledge and skills identified as being relevant to enterprise learning.

The skills can be developed and many disciplines already develop such skills, just not explicitly in the context of enterprise. An issue would be formalising and liberating the development of enterprise knowledge and skills (in novel contexts). Another issue that emerged was about the timing of when to expose learners, progression in the development and the extent to which it is possible to transfer the learning and development to other contexts.

In summary, enterprise can be seen as a vehicle for enhancing the student learning experience.

## 4 Challenges

Having agreed a shared understanding of *enterprise*, key challenges in embedding enterprise in the disciplinary groups were set out. The identified challenges were:

- Taking a holistic approach to the student experience which sees linkages across the curricular, extra-curricular and sub-curricular experience
- Challenging mindsets, behaviour and culture by creating the right environment to take forward enterprise learning, e.g. failure should be seen as an a useful learning outcome
- Broadening staff engagement with enterprise and providing relevant support and development that specifically boosts their 'real world' confidence
- Directly targeting students as a means by which to encourage change in the curriculum
- Adopting and embedding appropriate pedagogies which are focused on achieving identified outcomes and enabling enterprise learning in practice by engaging learners in 'real world activities'
- Differentiating the approach by: (a) Subject Centre as everyone is at different stages of thinking and development; and, (b) subject and level
- Making sense of enterprise and ensuring a fit with other agendas, e.g. Personal Development Planning, employability, corporate and social responsibility (CSR)
- Evaluating existence and new practice to identify 'what works well' and 'what doesn't work so well'.

In relation to Engineering and Information & Computing Sciences, a number of discipline specific challenges were highlighted.

### Engineering

- Overcoming professional credibility which stems predominantly from experience (track record)
- Enabling engineers to see the relevance and importance of human factors, e.g. how to effectively deal with people

### **Information & computing sciences**

- Dealing with an already overcrowded and over-assessed curriculum
- Encouraging the recognition of the value of 'definable' processes

## 5 Moving forward

In moving forward participants working in cross-disciplinary groups identified where the opportunities for movement lay. Specific ideas included:

- Disseminating the evolving view and interpretation on enterprise and entrepreneurship
- Encouraging greater levels of cross-disciplinary team working throughout all academic years
- Developing an enterprise matrix to be primarily used by students to help them identify the enterprise skills they are developing
- Preparing 'guides' (e.g. how to handle IPR issues) and exemplars of practice to support this area of learning
- Providing staff training to build capacity and capability, particularly in community engagement and other related reach out activities.

It was recognised that in order to move forward a range of change management strategies would need to be employed, for example, identifying and working with champions to encourage others to adopt enterprise learning and using the student voice as a powerful means by which to influence curriculum change.

The Centre Managers of Engineering and Information & Computing Sciences are to discuss and agree with the Director of Biosciences the next steps, in particular how best to collate a set of discipline based case studies. Alongside this Biosciences agreed to establish an email discussion group to enable ongoing consideration of the shape and focus of the case studies.

# Annex 1 – Enterprise knowledge and skills

The enterprise knowledge and skills identified included:

- Ethics and integrity
- Reputation
- Creativity
- IPR
- Risk management and assessment
- Innovation
- Opportunity recognition
- Commercial exploitation
- Finance and accounts
- Venture capital and raising finance
- Business planning
- Marketing and selling
- Public relations
- Leadership and visioning
- Team building
- Project management
- Human resources
- Self awareness
- Health and safety
- Presentation skills
- Negotiation

It should be recognised that students will need a level of confidence and feel comfortable enough in their 'environment' to apply these skills in the first place. The outcome of developing and applying these skills in context will, however, be greater levels of self confidence (or self efficacy).

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