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Teaching Entrepreneurship and Enterprise Skills

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Electrical & Electronic Engineering BSc (Hons)

1975 – 10 job applications → 11 job offers!

2012 – 10 job applications → 1 job offer **perhaps!**

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The employment scene is very different today!

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Where do graduates go?

- Employment – linked to study subject
- Employment – not linked to study subject
- Self-employment (immediate? More likely 3+ years out)
- Research
- Further education
- Intentional unemployment
- Unemployment

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Study subject domain skills

- Employment – linked to study subject
- Employment – not linked to study subject
- Self-employment (immediate? More likely 3+ years out)
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- Further education
- Intentional unemployment
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Graduate competitiveness

Employability = Domain specific skills

+ Generic/Employability/Transferability skills

Employability = Domain specific skills
+ Generic/Employability/Transferability skills
↑
Entrepreneurial skills ?

Employability = Domain specific skills
+ Generic/Employability/Transferability skills
↑
Entrepreneurial skills-?
Enterprising skills

Who ✓
What ✓
When
Where
Why ✓
How

Why I am giving this talk
What is it to be enterprising
How can it be taught
Some examples from York
An example fully integrated departmental enterprise strategy
The key messages

Qualifications

FCD & Chartered Electronic Engineer
MBA

Experience

18 years Industrial experience
19 years as Academic
Business Management in the Electronics Department

Positions held

Director of the Centre for Excellence in Teaching and Learning in Enterprise
President of the EAEEIE – 6 years (just finished)

Research interests

Measuring entrepreneurship
Engineering education efficacy

- 1999 – 2005 WRCE, UK Science Enterprise Challenge
 - 5 year funded project
 - Enterprise in STEM
 - >200 Teaching resources created
 - Strong brand developed
 - It had its problems
- 2005 – 2010 WRCTLE, HEFCE Centre for Excellence
 - 5 year funded project
 - Enterprise in SSAH & STEM
- 2011 – Enterprise at York
 - Refocused towards Student Enterprise activities

Confusing concepts

Enterprise - having an idea, and taking advantage of the opportunities to make things happen

Entrepreneurship - an activity which leads to the creation and management of a new organisation designed to pursue a unique, innovative opportunity (Hindle & Rushworth, 2000)

Intrapreneurship - "dreamers who do," those who take hands-on responsibility for creating innovation of any kind within an organization". (Pinchot 1999)

University view:

It's not about starting a business
It's about developing a student who is 'enterprising' in whatever walk of life they choose to follow.

**Enterprise skills depend on the discipline.
The adopted definition depends on the discipline.
Our interpretation is flexible!**

Teaching Entrepreneurship & Enterprise – Strategic options

Embedded model

- + Taught by familiar staff
- + Contextualised to subject
- + Enthuses staff + students?
- + Real culture change
- + Pedagogy locally set
- Teaching staff not experts
- Long term sustainability
- Needs departmental champions

Service teaching model

- + Teaching economy of scale
- + Taught by an 'expert'
- Timetabling complexities
- Teaching subject based
- Pedagogy set by expert (but to 'customer' spec?)
- Mass 'Sheep dipping' ?

Teaching Entrepreneurship & Enterprise

- Embedding enterprise into academic modules
- **NOT Business School led**
- **Distributed teaching**
- **Bottom up**
 - Funded through a curriculum development budget
 - Departmental enterprise champions
 - Ensures sustainability
- All developed teaching materials go into the pool
- STEM subjects - 8 (WRCE) + 3
- Health Sciences - 1
- Arts and Humanities - 10
- York Award - 3
- Careers / Life Long Learning - 1
- Professional Organisational Development - 1
- Continuing Education - 2
- Colleges – 1
- Postgraduate training – 1 course

History of Art – College Art Gallery

*Students design, plan and run a real Art display
in a real Art Gallery*

**Skills: Planning, Marketing, Financial reporting, Team working,
etc.**

Personal Professional Practitioner

Musicians, Lawyers, freelancers (of any flavour)

**Skills: Marketing (of self), Finance (personal survival), Personal
effectiveness (self organisation),
Activity & Time management, etc.**

History of Art – College Art Gallery

Personal Professional Practitioner

Common components:

Detailed module specifications

With enterprise learning objectives & assessment

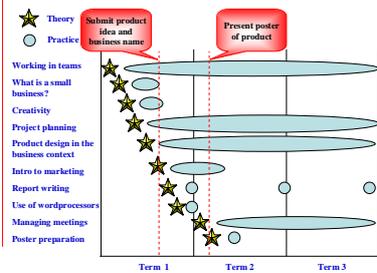
Supporting teaching and learning resources

Enthusiastic lecturers

- Department of Electronics, York – *Entrepreneurial model*
- **Stage 1: One intervention**
 - First year group project
 - Development of transferable skills
 - Rag-bag 'catch-all' module
 - Transformed to strong enterprise introduction module
 - Improved flow and cohesion

- Year 1 'technical' project
- Supervision groups
- 4 – 5 students
- Never met before
- Cultural adjustment from school
- Multicultural mix

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Year 1 Project

★ Theory
○ Practice

Use of spreadsheets
Project costing
Intro to production
Intro to finance
Public speaking
Intro to legal matters
Producing the business plan
Design and build product

Term 1 Term 2 Term 3

Presentation of product & business plan

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Year 1 Project

★ Theory
○ Practice

- JIT Teaching model
- Experimental
- 'Fun' activity
 - Motivational
 - Team Building
 - Work ethic
- Behavioural development
- Foundation to build theory upon

Use of spreadsheets
Project costing
Intro to production
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Term 1 Term 2 Term 3

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Enterprise in Electronics

- Department of Electronics, York
- **Stage 1: One intervention**
 - First year group project
 - Development of transferable skills
 - Rag-bag 'catch-all' module
 - Transformed to strong enterprise introduction module
 - Improved flow and cohesion
- **Stage 2: More than one module**
 - Year 4 *Enterprise* module

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Are we successful? How do we assess?

What are the measures of success for enterprise related modules?

assessment by conventional knowledge and application (appropriate cognitive level)

Enterprising 'technical' knowledge

Enterprising behaviours

Transferable skills – through demonstration of the skill

Equipped student

Enterprising skill – a complex metacompetence / meta-behaviour

Entrepreneurship – not a competence but a process requiring competences and behaviours –

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Enterprise skills

SOFT

Working in teams, Creativity, Innovation,
Project planning and management,
Presentation skills, Managing meetings
Problem solving

HARD

Business research, Nature of business,
Business plan, Marketing, Product design,
Accounting and Finance, Legal issues
Human Resource Management
Production, Quality & Logistics

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Are we successful?

- What are the measures of success for enterprise related modules?
 - Enterprise 'Technical' modules – assessment by conventional knowledge and application (appropriate cognitive level)
 - Transferable skills – through demonstration of the skill
- Entrepreneurship
 - Entrepreneurial Intent (EI) & Venturing Self-Efficacy (VSE)

The real proof

Outcome measure – Graduate employment of whatever flavour!



Key messages

- For academic staff
 - It is not that difficult to integrate elements of enterprise into modules
 - Positive impact on student motivation
 - Supports employability agenda
- For students
 - A good cv is a valuable asset
 - Enterprising skills add value & are worth going that extra mile for
 - What you get out of your degree is a function of what you put in



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Thank you for listening



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