

Developing a foundation in Enterprise skills in Engineering students (*Running Your Own Show*)

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Abstract

This module, given in the first year, aims to provide the students with an introduction to entrepreneurship that is used as a foundation for more in-depth and focussed subject specific development in later years. The module runs throughout the first year and is core for all Electronics students. In overview, the module involves students in small groups looking at a range of activities leading to the development of a business plan to support their hardware project.

Background/key features

Module size	Single
CATS points	10 credits
ECTS credits	5
Open / restricted	Core for all Electronics students
Availability on/off campus	On campus
Total student study hours	100
Number of weeks	One full academic year

The module started life as a 'Transferable Skills' module, a one-hour per week lecture series throughout the first year that was used to develop student key skills and as a vehicle for promoting team working within the supervision groups. Students chose a project to work on based on an everyday problem. The project work involved them designing and constructing a prototype of the product for presentation to a panel of judges at the end of the summer term. Lectures were given during the three terms on a number of different transferable skills timed to coincide with activities either for the project or as part of the main degree programme. Criticism of the module was, at times strong; it was seen as lacking cohesion and gained the reputation of being a group project and a disparate set of lectures.

The module was redesigned and reshaped by the addition of enterprise. Now, the objective is enterprise and it is the project that drives the timing of the key skills development sessions. The result is greatly improved cohesion and a solid foundation in enterprise skills.

In recent years the cohort has been in excess of 100 students of very mixed backgrounds in terms of country of origin and age. Groups are, in the main, of common academic subject interest area (Straight Electronics, Communications, Computing, Music Technology, Media, Management, and so on) but are intentionally mixed therein.

The module is a mixture of taught activities and self study tasks, the later being mainly group activities although there are some individual tasks.

Why run the module?

The module serves the three key objectives of developing a team ethos within the supervision group, developing key skills to support student development and the main degree programme and to lay a foundation in enterprise. The main positive outcome for the Department has been a greatly improved module. The introduction of an enterprise component also aligns with recent government initiatives aimed at encouraging the teaching and development of innovation and entrepreneurship at all levels of the curriculum.

What skills and abilities are enhanced and developed?

The specific enterprise skills developed relate to 'What is a small business?', creativity, project planning, designing products in the business context, an introduction to marketing, project costing, an introduction to finance, an introduction to legal matters and producing a business plan. In addition, students start to develop their competence in public speaking, report writing, and working in teams.

Skills development takes the form of a 'piece of theory', usually in the form of a lecture, followed by the first opportunity to use their new knowledge. The students are reminded of the need to reflect on learning and, in some skills, multiple opportunities are provided to learn from doing.

What skills and attributes do students need to embark on the module?

There are no pre-requisites for this module.

What is the role of the lecturer and others?

My role was to design and part deliver the module. I also wrote the enterprise study guide which all students are given at the start of the module. Delivery is in conjunction with two other lecturers. How the module is delivered is very flexible and can be covered by one or multiple lecturers as resources and skills allow. Whilst we do not use external lecturers or industrial input to the module this is an option and would add 'colour'. Judging of the final presentations is performed by a panel comprising internal and external people.

Links with outside agencies and employers

White Rose Centre for Enterprise (WRCE) – a consortium of the Universities of Sheffield, Leeds and York. The WRCE promotes the embedding of enterprise content in undergraduate and postgraduate modules within the Science, Engineering and Technology subject areas.

How is the module assessed?

The module learning objectives are through a range of assessed activities including a presentation to peers and academics; submitted reports; a poster; and the groups' final project presentation and business plan.

Issues and barriers

The hardware part of the project has been simplified from the free choice students originally had. Now, students select one project from a choice of five all related to a model train project. The model train project is a simple train set layout that requires control of a number of elements to make it work as per a set of given instructions, that is to control two trains running on the same track layout to a prescribed set of rules. The five projects are: train speed control, train logic control, sensors and actuators (there are points and track section lights), audio effects and video effects. The projects relate to some of the main academic themes we have running through the degree programmes we offer.

The project, and hence the module, relies on colleagues coaching their supervisees and encouraging them to plan the project work carefully from the outset. Each project is approximately balanced in terms of design and development work but requires different skills sets, each project also requires the enterprise components to be worked on by the student group. Support from academic colleagues in this support area is variable but is generally there.

The Department is very supportive of this module and has invested in the hardware to make the group projects (the five train set projects) possible. The choice of an add-on to a commercial train set is, in retrospect, not the best choice of project for a parallel investigation into enterprise possibilities although student groups make a good attempt. A freer choice of project would be better.

What evidence can be provided to show if the module was a success?

Student feedback has improved. Our Industrial Advisory Committee and external examiners have complimented us on the module and the ability of students in the topics it addresses.

Reflections and future developments

Given the experience of a number of years running this project the next major change recommendation will be the opening up of choice on project area. York sees the development of all skills relating to entrepreneurship and general employability as very important. Whilst the general approach to teaching allows Departments considerable flexibility in how this is achieved, annual monitoring by the Teaching Committee through annual programme reviews helps to ensure progress is made. Encouragement of teaching innovation is given through initiatives such as teaching innovation grants. There is also a Forum for the Enhancement of Teaching and Learning that provides a focus for new initiatives and a route for dissemination of good practice.

References

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