

Enterprise Teaching Case Study

Example/Case Title	Entrepreneurial Skills Taught in the Context of Drug Discovery and Development
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School / Department	Faculty of Biological Sciences
Institution	University of Leeds
Activity	An extended 2-3 day exercise/masterclass for 3 rd or 2 nd year pharmacology students which practises some of the skills required by entrepreneurs and provides information on market assessment, finance, profit and decision making in the context of the discovery and development of new drugs
Student Group	BSc Pharmacology students; Year 2 (semester 2) and year 3.
Aim	To enable students to develop business understanding and entrepreneurial and other generic skills in a discipline context of a simulation of the discovery and development of new drugs
Context / Background	This example was included first in the program in 1995 when it was delivered by a major pharma company. The paper based simulation was first used in 1998 and has been used both within a degree programme and as an additional voluntary certificated exercise. The rationale was to develop in students a greater understanding of the business of drug discovery and development in the context of big pharma.
Example description	<p>The 2-3 day exercise has been run in a variety of ways incorporating new or different materials according to the experience and aptitudes of the member of staff running the session. In one successful format the activity has been run over two full days with students working in small groups (6-8) to undertake a range of tasks including data evaluation and oral presentations; at least 10 groups can be handled by one member of staff. The programme also incorporates video material and presentations by staff.</p> <p>The masterclass is designed to achieve a variety of objectives which include the development of knowledge and skills required by entrepreneurs in this area. It does not separate entrepreneurial skills from other generic skills/knowledge.</p> <p>The objectives are:</p> <ol style="list-style-type: none"> 1. To gain an appreciation of the time scales and activities involved in the process of discovering, testing, obtaining approval for, and marketing, a new prescription medicine 2. To understand the mix of factors influencing the market that need to be brought into the decision as to which disease area a pharmaceutical business could decide to invest in research programmes for 3. To experience the use of a rating system for market investigation and to select a disease area in which to undertake drug development activities 4. To understand the financial issues behind a potential research programme and the

	<p>concepts of income, expenditure, profit, expenses and the balance sheet</p> <ol style="list-style-type: none"> 5. To appreciate the pros and cons of rational design vs. high throughput screening or other strategies in the drug discovery process 6. To use data generated from biological tests to appreciate the hurdles which need to be overcome to produce a compound which could progress from the research laboratory into studies in volunteers 7. To use the information presented to practice and develop skills in analysis, negotiation, data interpretation and decision-making 8. To practice and develop communication skills and the ability to work in a team <p>Teaching materials</p> <p>A sample timetable and student introduction to the masterclass is available to download from ftp://www.bioscience.heacademy.ac.uk/Resources/drugdd_enterprise.rtf</p> <p>All other associated teaching materials (PowerPoint slides, Word documents and video tapes are available as the 'AstraZeneca Teaching Day Resource Pack from the British Pharmacological Society (http://www.bps.ac.uk/education/resources.jsp?ref=686)).</p> <p>Orders or enquiries should be addressed to Carol Medal, pharma-CAL-ogy, British Pharmacological Society, 16 Angel Gate, City Road, London, EC1V 2SG. UK. Tel: 44-(0)20-7239-0172. Fax: 44-(0)20-7417-0114. E-mail: cmj@bps.ac.uk</p>
<p>Results / Feedback</p>	<p>Members of staff have been able to utilise the materials provided to mount the teaching exercise quite easily, though it is essential that staff read through the material and are properly prepared. It is significantly more difficult for less experienced staff or those without a broad knowledge and experience of pharmacology.</p> <p>Feedback from students indicates the exercise is very successful. 67 evaluation forms were returned from the 74 students participating.</p> <ol style="list-style-type: none"> 1. The scores (1-5 scale) were generally 3.7- 4.1; this represents a high level of approval. The score for question 'should it be repeated next year' was the highest (4.5) and is a very high value. 2. Verbatim comments Very good, very interesting. Very constructive and useful overview of drug discovery. Very useful and informative insight into the industry. A great idea to introduce students to the world of industry finance, entrepreneurship and decision making especially in small groups.
<p>Further comments or information</p>	<p>The approach was to embed material on entrepreneurship within the discipline context and to practice the range of generic skills needed by entrepreneurs as well as my other graduates.</p>