



6 DEVELOPMENTS IN EMPLOYABILITY WITHIN BIOSCIENCE COURSES

EMPLOYABILITY IS A PRIORITY issue in bioscience, not just because it is a government priority but also because students, loaded with debt, are much more conscious of their need to be able to compete effectively in what is now a global job market and to actively manage their careers, both short and long term. Employability is not just about getting a job but is concerned with acquiring, maintaining and growing the knowledge, skills and attitudes valued by employers and being able to manage a satisfying and productive career across a changing job market. 'Having employability' is not the same thing as 'being employed'.

In recent years there has been a change in the aspirations, motivation and focus of students who take bioscience courses. In addition, the nature of employment of bioscience graduates has changed. Thirty years ago the vast majority of students who completed university bioscience courses went on to take jobs in bioscience areas, many in laboratory-based activities. Those with bioscience-related jobs often stayed in the same area of interest for life. Neither of these circumstances now apply, in part because the bioscience disciplines are developing at an unprecedented rate as new knowledge and techniques are discovered and new applications developed.

The employment experience of bioscience graduates is now characterised by transience and variety. Transience since many jobs are short term and graduates move quite quickly from one post to another. An informal survey has shown that as many as 75% of newly employed bioscience graduates changed their job within the first two years. Therefore, the ability to plan a career is

important, as is an appreciation of the need to actively control development and experience in order to position yourself to be successful in competing for the job you want. Tools to help students with this are available. For example, the Windmills material (<http://www.windmillsprogramme.com/>) and also an employability card sort (<http://bio.ltsn.ac.uk/issues/employability/cardsort/>). These materials help students identify their priorities and position themselves so they can develop and improve in areas of weakness. Career- and self-management skills apply not only to careers after graduation since the ability and awareness

of the need to manage a programme of learning is important. Significant choice of modules is often now available within a particular programme. The student who wishes to have a laboratory-based career but chooses to do non-laboratory based modules is a classic example of unsuccessful programme management!

Variety in employment has changed and in many cases the proportion of graduates going into non-discipline related jobs is high. There are, however, large fluctuations between universities. Table 1 shows the proportions of pharmacology graduates going into various occupations — some 50% of these were not pharmacology related. One cohort of 436 bioscience graduates found jobs with 316 different employers demonstrating the diversity of possibilities. Indeed, one of the challenges in courses today is to bring home to students at an early stage the range of opportunities available to those with a good bioscience degree. Bioscience courses have changed because discipline knowledge and bioscience laboratory skills are not seen as the only things needed in bioscience graduates. These aspects are still very important and any

Table 1 Employment destinations for Pharmacology graduates

Employer category	Percentage of Pharmacology graduates
Pharmacology	
Research degree	30
Clinical research/regulation	12
Pharmaceutical industrial lab	8
Non-Pharmacology	
Non-Pharmacological science	17
Undergraduate student	8
Management/administration	6
Teaching	4
Non-scientific	15



Figure 1 Showing for three broad areas of employment the differing importance of discipline-specific knowledge and skills, generic skills and attitudes/aptitudes. Note that while the latter are important in each category of employment, it is not necessarily the same attitudes/aptitudes which are required.

	Subject knowledge	Subject-specific skills	NON-subject-specific skills (personal skills)	Appropriate attitudes and aptitudes
Further study (e.g. PhD)				
Discipline-specific job				
NON-discipline-specific job				

graduate competing for a bioscience laboratory job without good discipline related knowledge and skills will be unsuccessful. However, these are not enough in themselves. Figure 1 shows, in relation to four elements, the needs of students going into three different types of career. Clearly it is apparent that even bioscience-based employers value the possession of the 'employability' skills.

Evidence for this comes from an examination of the appraisal processes applied by employers to their new graduate employees. These appraisals may be both developmental and evaluative and may contribute to the promotion, bonus or salary of an employee. Examination of the appraisal systems used by employers (<http://bio.ltsn.ac.uk/issues/employability/skills.htm>) shows that job-related objectives are important and very aligned with group and corporate objectives. In addition, there is an emphasis on employability skills and attitudes such as initiative, team work, communication, flexibility, etc. The inclusion of these aspects in the formal appraisal process for new graduates demonstrates the value bioscience employers place on these features.

Improving the employability elements in a course is, therefore, a matter of good teaching and appropriate curriculum design which offers flexibility and student choice appropri-

ate for all. It should not be seen as a bolt-on, only necessary for particular groups of students. Curricula designed to deliver this flexibility and to provide the opportunity for individually tailored student experience are therefore important. However, it is not just within the curriculum where students acquire and practice employability skills. Extra-curricular activities within the university (clubs, societies, representative committees) also contribute, as does the work and social activity in which the student participates. It is important that students appreciate that learning takes place outside the curriculum and that they can use the whole of the student experience to demonstrate that they have acquired and applied these employability skills. The whole of the student experience should be drawn upon to develop a good quality CV. The student who said that his part-time evening work as a barman/waiter in a restaurant did not contribute to his skills undervalued the negotiating skills, conflict resolution skills, time management skills, social skills, and mathematical skills, to name just a few, which he used every night.

Just as students need tools to help develop their employability so academics also need the help of tools to develop the employability aspects within their courses. To this end an employability audit is available (<ftp://bio.ltsn.ac.uk/employability/empau>

dit.rtf) which can be applied by programme teams to improve the employability aspects of their courses and to identify employability elements which are already successfully embedded in their courses. Many employability elements simply reflect good teaching and are already included in courses though, being fully embedded, are not identified or recognised as such. Where weaknesses are identified help is available in the Generic Centre Resources Guide by Rod Oakland (http://www.ltsn.ac.uk/application.asp?section=generic&app=resources.asp&process=full_record&id=165) and in the recent Employability Series published by the Generic Centre and available from their web site or through LTSN Subject Centres. In addition, because of the priority assigned to employability many LTSN Subject Centres have developed their own subject-specific website on employability matters (e.g. <http://bio.ltsn.ac.uk/issues/employability/index.htm>).

Work experience either in formal placements or in less formal contexts provides an excellent opportunity to develop employability. Many bioscience programmes provide opportunities for students to gain work experience in bioscience-related areas. Others may use simulations, scenarios and case studies to relate learning to real situations. Students see not only the relevance of what they are learning but also see the breadth of different opportunities which are available even within the bioscience field. Bioscience programmes still provide the academic rigor and intellectual challenge and stretch able students in the context of a fascinating, fast-developing and intriguing area of science, developments in which have huge implications for mankind and the entire planet. Bioscience programmes should fully equip students to participate in non-discipline related jobs, as well as in the development and application of what, over the next 25 years, is going to be the most important and influential area of science that exists.

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