

# Addressing the Employability Needs of Forensic Science Graduates

Mark Fowler

The Leicester School of  
Pharmacy,  
De Montfort University  
The Gateway  
Leicester  
[mrffowler@dmu.ac.uk](mailto:mrffowler@dmu.ac.uk)

Richard Brawn

The Leicester School of  
Pharmacy,  
De Montfort University  
The Gateway  
Leicester  
[rjbrawn@dmu.ac.uk](mailto:rjbrawn@dmu.ac.uk)

Anna Marriott

The Leicester School of  
Pharmacy,  
De Montfort University  
The Gateway  
Leicester

P. Lucy Roy

The Leicester School of  
Pharmacy,  
De Montfort University  
The Gateway  
Leicester

Nigel Scott

The Leicester School of  
Pharmacy,  
De Montfort University  
The Gateway  
Leicester  
[nws@dmu.ac.uk](mailto:nws@dmu.ac.uk)

Hilary Patterson

Education Consultant  
[hilarybpatterson@yahoo.co.uk](mailto:hilarybpatterson@yahoo.co.uk)

## Abstract

Employability continues to be a key government, industry and HE priority and is yet at the same time a contentious issue. This paper explores the curriculum interventions made to forensic science undergraduate provision in response to the employability agenda. De Montfort University interns have undertaken a thorough review of the needs of employers in the sector, student perceptions of employer expectations and their own abilities in key employability skill areas. Following on from this the interns conducted a comprehensive skills audit of the programme and contributed to curriculum developments so that the provision better met both the needs of employers and the needs of our undergraduate students. This paper summarises the results of the interns' work and some of the curriculum developments arising and concludes that there are a range of possible interventions that could improve the employability of our undergraduate students.

## Keywords

Employability, curriculum, forensic science, interns, pedagogy

## 1. Employability in Forensic Science Provision

The HE sector is under greater pressure to consider the employment outcomes of its' graduates and how best to prepare them whilst studying (see Fowler et al, 2012). Employers continue to demand graduates with the employability and technical skills they need particularly in a time of economic pressure (CBI/ UUK, 2009).

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## 1.1 Employability and Forensic Science

As described in Fowler et al (2012) De Montfort University has employed several interns, to help improve the employability of forensic science undergraduates. The interns were year 1 and year 2 Forensic science undergraduate students from De Montfort University who completed their internship on a part-time basis primarily over the summer vacation period. The interns had a wide ranging employability brief that covered aspects of employer needs, student perceptions of employer needs and curriculum development as well as producing various outputs for students including practical guidance for employability. In order to prepare students for future employment we needed to understand the needs of employers and whilst there is much generic literature available in this area it is important to understand the needs of Forensic Science / STEM employers. The interns undertook desk top research using job advertisements and person specifications together with interviews with key employers drawn from forensic science providers and other major employers of forensic science graduates as discussed in Fowler et al. 2012, to identify the requirements of employers in this sector. They identified and ranked both the technical/job specific skills and the personal attributes and core skills (as defined by Saunders and Zuzel, 2010) to produce a complete skill-set sought after by employers of forensic science graduates. Whilst there is much debate in the literature about definitions of employability skills, competences, attributes etc. (see, for example, Holmes, 2011), it is interesting to report that employers themselves talk about the skills they need. The interns found that across both small and larger organisations employers were more likely to prioritise transferable skills over technical ones although clearly an implicit assumption is made about the content of the degree programme. This supports the findings of earlier work investigating all sectors such as Archer and Davis (2008).

Skills identified in this study (top ten skills, ranked)	Final year De Montfort University forensic science undergraduate student self-rating (ranked)	UK All subjects final year undergraduate students self-rating (adapted from Atfield and Purcell, 2010)
Communication (written)	IT skills – 1st	Communication (written) – joint 1st
IT skills	Teamwork - joint 2nd	Teamwork – joint 1st
Communication (oral)	Problem solving - joint 2nd	IT skills – 2 <sup>nd</sup>
Teamwork	Numeracy – joint 2nd	Communication (oral) – 3 <sup>rd</sup>
Interpersonal/influencing/persuading/negotiating (IIPN)	Communication (written) – joint 3rd	Leadership – 4 <sup>th</sup>
Organisation	Organisation – joint 3rd	IIPN – 5 <sup>th</sup>
Leadership	IIPN – joint 4th	Organisation – joint 6th
Numeracy	Leadership – joint 4th	Numeracy – joint 6th
Problem solving	Communication (oral) 5th	
Business/customer awareness and relations	Business/customer awareness – 6th	

Figure 1 Ranked skills and final year undergraduate self-rated ability (ranked) in those areas and comparison with ranked self-rating derived from data from a much wider study (Atfield and Purcell, 2010) for key skills and attributes.

Figure 1 gives the top ten skills and attributes by employers in the sector, which is very similar to those identified by forensic science graduates as the skills most valued by employers (see Hanson and Overton, 2010) and the attributes and skills employers identify that successful graduates in all sectors require (see CBI/NUS, 2011). This apparent emphasis on personal attributes and core skills does not mean that technical skills are not required or sought after by employers in the sector but, as mentioned above, are in many cases assumed or presumed as part of a specified level of attainment in a specific degree programme.

## 1.2 Curriculum interventions

It is clear then that with the impetus from government and industry and the needs and wants of our student body that some curriculum interventions designed to address the various issues is required. There are many questions and models as to how employability is introduced in to the curriculum (Pegg et al 2012; Fowler et al, 2012) but there appears to be no accepted standard and indeed advice from some sectors seems to favour a *tailored* approach (CBI and UUK, 2009).

One key aspect in curriculum intervention is the willingness of students to engage with employability skills as part of the curriculum. Surveys of our undergraduate Forensic Science students showed that 89% expected to be taught and/or develop employability skills at university. 77% of those surveyed thought that employability skills should be assessed with 80% thinking that the assessment should be formative. The focus on feedback to students rather than straight assessment against standards was reinforced by the following; when asked what specific areas of generic skills students would value additional feedback on the results were quite clear that both first and final year students thought that greater feedback in specific generic skills was required. It was also informative to note that when asked to self-rate their own abilities with respect to each core skill and attribute there was a wide range of scores (see figure 1) and additional feedback was requested even for areas where as a whole self-rating scores were high (such as teamwork and problem solving). Indeed the request for additional feedback was greater in some high-scoring areas than in some areas where students self-rated relatively poorly, such as oral communication. This of course might reflect the fact that on the whole final year students would appreciate additional feedback in most areas. Comparison of our forensic science final year undergraduate student self-rating with a much wider study (figure 1) showed some interesting differences, particularly in areas of communication, both written and oral, where the forensic science self-rating was ranked much lower than the general undergraduate population and numeracy where the picture was reversed. Communication was clearly perceived as an area of relative weakness by the forensic science undergraduates, this perhaps reflecting the particular demands made of forensic science students in the area rather than any, fundamental, lack of ability.

Generic Skill	Year 1	Year 3
Team work	71%	90%
Written communication	100%	90%
Oral Communication	82%	85%
Problem solving	94%	90%

Figure 2: Percentage of year 1 and year 3 undergraduate students that would value additional feedback in these skills

It was informative to note that in order to achieve this students were, on the whole, willing to spend more time in class addressing employability skills (year 1 82%; year 3 71%) but were unwilling to lose time that was spent on subject specific skills (year 1 76%; year 3 88%). Whilst presenting a problem in terms of an ever expanding curriculum and class contact there was an appreciation and willingness amongst students that spending more of their own time might be required in order to gain the requisite employability skills (year 1 88%; year 3 80%).

## 1.3 Example specific interventions from the study

Whilst we have not adhered to any one model for introducing employability to the curriculum (as discussed in Pegg et al, 2012) we have built on and adapted several aspects of both the USEM (Yorke and Knight, 2004) and CareerEDGE (Dacre Pool and Sewell, 2007) models and it is clear from our survey of employers that the expanded generic skills set proposed in the CareerEDGE model matches the expectations of potential employers of Forensic Science graduates. We have however met the recognised problem in how to introduce curriculum developments in this area; as

Dacre Pool and Sewell (2007) observed “Many HEIs are struggling to find ways of delivering the employability, enterprise and entrepreneurship agenda. This is becoming increasingly important, not just because of government pressure on HEIs to demonstrate their avowed commitment to these issues, but also because of the need to respond to the demands of students, parents, employers and other stakeholders”.

There is, implicit within this the need for graduates (and undergraduates seeking placements etc.) to be able to demonstrate their attainment of various skills and competencies, something that our own observations and those of others (for example, Pegg et al, 2012) has shown to be a problem. There is the need therefore for an integrated approach allowing students to evidence successful attainment in employability skills, through assessment and feedback and completion of some form of PDR/record of achievement /portfolio. Changes to current assessment and feedback procedures and types have been designed to address the issues identified by Knight and Yorke (2003) around students being able to demonstrate their achievements in a language accessible and recognised by employers. The strategy is one based around the concept of “Employability in the core curriculum” (Yorke and Knight, 2004) for adjustment to assessment and feedback procedures. In this respect Forensic Science students are perhaps in a privileged position as many of the so-called generic employability skills are, in fact, subject specific skills. This is exemplified by the inclusion of phrases like “Write comprehensive, comprehensible, rational and impartial reports” and “Demonstrate good oral and presentational skills that would enable the student to be understandable in a court of law” in the Forensic Science Society analysis, interpretation and presentation of evidence accreditation component standard. This simplifies matters to some extent when determining where to address employability in the curriculum.

Others have been specifically designed to dove-tail with recent changes to the academic calendar at De Montfort University that identifies specific time in the teaching period to be devoted to the development of employability skills, which allows the development of activities outside the usual curriculum. We give some examples below, these are dealt with as they define our approach in some areas and are examples of prioritised interventions based on areas where student self-rating was relatively low (oral presentations), where students would not be able to evidence attainment in particular areas (teamwork) and where employer demands were particularly high.

*Oral presentations*; feedback for all presentations includes formative comments on process and summative assessment for several presentations includes assessment of process as opposed to simply assessing end product. This allows students to demonstrate achievement in this key area for Forensic Science graduates and addresses an area where both year 1 and 3 students expressed a desire for increased feedback and is an area where both year 1 and 3 students feel, on average, that their ability is relatively poor.

*Team work* has been an important part of university work and assessment for many years in forensic science but it is often assessed indirectly through assessment of the end product of the group work. Group work in key modules now requires that students complete peer and self-assessment tasks and produce reflective statements throughout the group exercise and process is assessed as part of the overall summative assessment of the exercise.

There remain though some areas where *simple* modifications of current procedures are not capable of addressing the need. A prime example is in business/customer awareness and relations, in which students self-rated their abilities as relatively low and was one of the top skills identified in this study and it was clear from discussions with employers that this was seen as an increasingly important area. Activities that will take place in the teaching time set aside for employability skills, outside the normal curriculum, have been developed that through role-playing in a commercial

situation, work-related tasks and project management provide an opportunity for students to develop these more challenging areas and receive feedback from employers. There are then opportunities for evidence-based, specific interventions which range from simple to complex both within and without the current curriculum which can be used to improve the employability of undergraduate students.

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