MINIREVIEW – Professional Development

On your marks, get set, go!—lessons from the UK in enhancing employability of graduates and postgraduates

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One sentence summary: A well-aligned curriculum supports planning and evidencing subject and transferable skills development, which is key to Higher Education Institutions meeting the expectation to produce work-ready employable graduates and postgraduates.

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ABSTRACT

Employers expect graduates and postgraduates to demonstrate their education through more than good grades. Learning activities that develop subject skills during formalized programmes of undergraduate and postgraduate study also develop employability skills, if the curriculum is suitably aligned, and developmental planning is supported. Only little extra provision is required, but all development needs to be explicitly signposted to the learner, and the curriculum should be developed in consultation with employers. This review aims to raise awareness of current issues in the context of enhancing employability that arise from an increased global competition on the job market and the expectation of the Higher Education sector to produce work-ready employable graduates and postgraduates. In the context of lessons from the UK, these current issues and employability are discussed, and approaches to Personal Development Planning that prepare students for lifelong learning and that enable communicating and evidencing achievement are addressed. Issues specific to postgraduates, how actual work experience should be maximized as well as other career influences such as learned societies and social networking are highlighted.

Keywords: career; curriculum; graduate attributes; PDP; skills; work experience

INTRODUCTION

There is increased national and international competition on the job market at entry level and when securing further employment. Graduates will not necessarily pursue a career within the subject area of their degree or indeed continue with conducting research, and postgraduates will not necessarily stay in academia. Students often pay for accessing education and then expect a return on their investment by being prepared for employment. The extent to this varies throughout Europe. The highest fees apply in England (maximally £9000 since 2012), whereas no financial contributions are required from students in Nordic countries. Fairly high fees are paid in Ireland, Italy, Latvia, Lithuania, Hungary, the Netherlands and Slovenia. In Germany, fees were required in some Federal States from 2007, but have been discontinued meanwhile (Eurydice 2014). 73% of UK undergraduates had embarked on their university studies to improve job opportunities (Lowden et al. 2011), which was also the main motivation of postgraduates in the UK (HEA 2011). The economic crisis in 2008 accelerated the marketization of Higher Education (HE) and drove the recent employability agenda. HE institutions are expected to graduate students
at all levels readily employable within the knowledge economy (Knight and Yorke 2004; CBI 2009b; Browne 2010), to subsequently make a contribution to society and economy (HEFCE 2011). More and more jobs require HE qualifications (UKCES 2009) and learned societies also demand that HE courses qualify students accordingly. The need for HE access reflects availability and affordability of further and vocational education and respective skill development across a country’s educational sector in line with employer/societal needs. In addition to marketization the UK has seen a massification of its HE since it was to be opened to 50% of school leavers (Labour party 2001). Large cohorts of students from diverse backgrounds have diverse needs in terms of their education as well as employability and career skills development. The educational framework and approaches of educators require adaptation to such changes in the HE sector, and sharing the resulting good practice and lessons is beneficial for the general HE community.

In the UK, graduate and postgraduate employability is measured via the Destination of Leavers of HE data collected by the HE Statistics Agency based on individual responses made by graduates and postgraduates to a survey six months after their graduation. Prospective students and the general public can access the figures as part of the Key Information Set for instance via Unistats (https://unistats.direct.gov.uk), the official government website for comparing HE course data. The social media platform LinkedIn also publishes destination information of graduates (Parr 2013). In 2015, according to Unistats, 78–100% of graduates of UK microbiology degrees sensed late went on to work or study, and 36–75% of the ones working had secured graduate jobs. In the UK, postgraduate studies have outgrown the undergraduate sector, with taught postgraduate students constituting 20% of all HE students and more than 75% of all postgraduate students (UUK 2009). About 80% of UK domiciled doctoral graduates in the biological and biomedical sciences find full-time employment. HE research posts are held by 26.7% doctoral graduates in the biological sciences and by 15.7% in the biomedical sciences. Employment in research outside HE is somewhat lower (20.6% biological sciences, 13% biomedical sciences) and teaching in HE follows different trends (12.5% biological sciences, 17% biomedical sciences) (Vitae 2013c). However, employability is not only about securing a job and as such cannot just be measured as employment rates to convey educational success of HE institutions (Harvey 2003, 2005). Employers expect graduates to have actively engaged with their education and that they can demonstrate this not only through good grades.

A suitably aligned curriculum that allows developing of subject and transferable skills, supporting developmental planning, fostering a commitment to lifelong learning and evidencing achievement is crucial for enhancing employability of graduates and postgraduates. Employability programmes are often too reliant on careers services staff and do not receive enough input from academics (Lowden et al. 2011). This review aims to raise awareness of issues around enhancing employability in times of increased global competition, economic pressures and the expectation of the HE sector to produce work-ready graduates and postgraduates. The discussion is written from a UK perspective and thus from within the European HE Area 2010. Supporting students is a transferable academic skill. Some specific issues as well as statistics will differ across countries, but the main drivers are common due to trans- and internationalization of HE and employment. The reader might relate issues to their own institutional context and might find ways to address those or take them forward e.g. curriculum development, providing training, supporting or mentoring of undergraduate and postgraduate students as well as peers, or even relate the issues to their own career development.

### WHAT IS EMPLOYABILITY?

Employability arises from a range of subject-specific and transferable employability-related skills (graduate attributes), and professionalism/work-readiness at an acceptable competence level for undergraduate students, taught or research postgraduate students. There is no general agreement on graduate attributes (Dunne, Bennet and Carré 2000; Harvey 2000; UKCES 2009), but Yorke and Knight (2004) refer to achievements that make graduates more likely to secure employment and to have success in their chosen occupation for their benefit as well as that of everyone else and the economy. Generic skills such as teamwork, organization and communication, personal attributes from self-confidence to meeting deadlines, and subject-specific skills enable effectiveness at work (Cooper, Orrell and Bowden 2010). Career education prepares students for employment and aids transition from education to the work environment (Wild and Wood 2013). Emotional self-efficacy and emotional intelligence can be developed in graduates through teaching, making them more likely to secure and retain employment, thus leading to satisfaction and success (Nelis et al. 2011; Dacre Pool and Qualter 2013). Career skills such as searching for jobs, writing a curriculum vitae and preparing for interviews need to be developed (Cooper, Orrell and Bowden 2010), which eventually also enables professionals to advance their career via promotions or seeking recognition. Personal tutors and postgraduate supervisors play an invaluable role in this context. In order to provide optimal support, academics should also have a very good overview of central institutional support such as mock interview sessions or psychometric tests.

83% of employers of UK HE graduates considered them at least well prepared, but 5% mentioned poor motivation or attitude. At times also technical skills were lacking (UKCES 2014). Graduates are not used to performance management and can struggle with professional conduct (Flynn 2013). Some employers felt ignored by HE institutions, and reported insufficient work-readiness as the major problem (Lowden et al. 2011). Others criticized lack of commercial awareness, teamwork and self-management, whereas graduates themselves actually deemed teamwork and motivation important, but were not always confident in their skills (Wild and Wood 2013). Pegg et al. (2012) emphasize that students need to be able to translate learning activities within their degree into demonstrating graduate attributes through the terminology used by employers. Thus, clear signposting throughout the degree programmes is essential.

Given that HE institutions are being held more accountable in the context of the governmental employability agenda, academics need to be well supported in their professional practice and enabled by their institutions to make informed decisions when enhancing employability (Krause 2014). Emphasizing transferable skills must not be confused with a call to abandon academic curriculum. Developing employability skills in students can also positively impact teaching styles and methods (Silver 2003). A well-structured curriculum and comprehensive academic and pastoral support are key, as well as authentic learning, where activities in the classroom mirror workplace activities (Lawson et al. 2011), and final year research projects or work placements. Innovative opportunities of authentic learning allow stretching able students and supporting all students in enhancing their work-readiness. Students can be recommended
to engage with those outside their formal curriculum, but such activities can also be embedded in the curriculum. Science festivals and citizen science projects encourage students to become involved. These are often accessible via learned societies, as well as vacation studentships, competitions and prizes. A particularly inspiring example is the iGEM competition in synthetic biology at national and the international level. Participation allows the development of employability skills such as teamwork and project planning in addition to the obvious context of subject skills. There needs to be flexibility in the curriculum and degree structures to quickly enough respond to a changing environment and to incorporate new features such as skills to communicate with lay audiences or opportunities to learn additional languages to enhance international mobility. Given the transferability of microbiological concepts, techniques and subjects, the microbiology community is generally fairly mobile and benefits from global employability and needs to be aware of this.

**PRACTICAL SKILLS AS AN EXAMPLE OF GRADUATE SUBJECT-SPECIFIC SKILLS**

Practical skills development is an essential element in microbiology and other biological sciences courses. Laboratory practical sessions are an authentic learning opportunity not only for laboratory skills such as aseptic techniques, preparing solutions and dilutions, but also for other skills such as data handling and analysis, embedding safety procedures and experimental planning. Providing practical work in the curriculum is resource-intensive due to the need for equipment and consumables as well as laboratory facilities and staff. Lack of resources puts the graduate practical skills base at risk.

Coward and Gray (2014) audited aspects related to practical laboratory work in undergraduate bioscience degrees in the UK. Students undergo an average total of 500 hours of laboratory-based training in a three year course, where they initially develop practical experience and skills, and where the focus gradually shifts to discovery and exploration. Practical research projects in their final year are at least available to all students who request them. Innovative alternatives are bioinformatics or scientific engagement projects as well as clinical audits or educational research. Coward and Gray (2014) also reported that academics perceived providing such time-intensive practical teaching as potentially detrimental to their own research and thus their career prospects. Teaching activities are increasingly being considered for promotion, but not yet equally across the HE sector (Cashmore, Cane and Cane 2013). Insufficient preparation from school and increasing student numbers additionally drain resources and put demands on staff time in the context of remedial support (Coward and Gray 2014).

**GRADUATE TRANSFERABLE SKILLS**

Consulting and engaging employers in the process of curriculum development allows for a more realistic skill provision not only in subject-specific skills (Wilson 2012), as well as for an appropriate skill progression during the degree. The Confederation of British Industry (2009a) listed literacy, communication, application of numeracy and information technology, problem solving, teamwork, self-management and a positive attitude, business/customer awareness and entrepreneurship/enterprise as requirements. The terminology used in HE can differ, and some of the elements are referred to in HE as critical thinking or managing complex information. UK employers are least satisfied with customer awareness, self-management and teamwork in graduates, and numeracy and literacy could also be improved (CBI 2011).

Wright and Frigerio (2015) highlighted the development of career adaptability in graduates as a prerequisite to adapt to changing and different work environments, as graduates move through positions in a less than stable labour market. Transferable skills enable graduates to operate in a generally uncertain future (Barnett 2004), and in areas where the specific body of knowledge is rapidly growing such as in the biological sciences. Some undergraduates consider developing skills related to conflict resolution, diversity awareness and to influencing others as quite challenging, which eventually directly impacts on their ability to efficiently work with others (Jackson, Sibson and Riebe 2014). A strategic consideration of all these skills sets and skills dynamics, when developing a curriculum, enhances graduate employability. Benchmarks and level descriptors for transferable attributes or competencies appropriate for graduates but also postgraduates are outlined in Jones and Warnock (2014).

**ENGAGEMENT WITH DEVELOPMENTAL PLANNING**

The UK Quality Assurance Agency for HE (2009) highlights the use of Personal Development Planning (PDP) for learning how to take responsibility, to act accordingly and create and use opportunities in degree courses and extracurricular activities to develop as an individual and academically. The necessary reflection, action planning and record keeping can be aided by auditing tools, personal profiling and portfolios/logbooks/diaries (Pegg et al. 2012). Students often see PDP as something artificial and complicated, and not as something everyone does routinely. A recent project aimed to help students across this threshold and to naturally engage with PDP by using LinkedIn as a tool for setting up an online professional profile (Middleton and Beckingham 2015).

Students do not engage well with formative activities, because the benefit is intangible and delayed gratification is not a popular concept. The ones in need of engaging most in order to develop and enhance their employability are less likely to engage, because they lack reflection and maturity to see that very need. It is a ‘catch 22’. The same goes for the ones without career plans, who delay considering employability issues until late in their course, because they perceive enhancement as not yet relevant, even though it is actually more relevant given their lack of career orientation. In this context, engagement can be improved by implementing compulsory elements (e.g. diagnostic tests for numeracy or literacy) and tangible benefits (e.g. personalized feedback on skills levels and guidance for remedial support), and by personal tutors and research project supervisors supporting this approach to PDP (Fahnert 2013). Students get used to it, see it less as an add-on and are prepared for the transition from PDP to continuing professional development. Students are set up as lifelong learners, are reflective and employable.

The value of PDP, employability-related skill development and contextual awareness should be emphasized gradually from the very beginning of a degree course. The common focus on activities in the final year is far too late (HEA 2014). Survey data (Buckley 2013) showed that UK students had much less often career discussions with academics than US students. In fact, 40% of UK students never discussed their career plans and another 40% only sometimes. Of all course activities, career discussions was the one students engaged with least throughout their
degree. Again they were more active and engaged in the final year when it is too late. Bridgstock (2009) argues that career-related skill development should be compulsory and summaratively assessed from early course stages on. The assessment can be for instance as a viva voce, where students present their career and action plan (Soulsby 2015). This exposes students to active career planning, PDP and an interview situation. Students experience this unfamiliar challenge as very stressful, but at least encounter it before it would win or cost them an actual job. The ‘Career Adapt-abilities Inventory’ (Wright and Frigerio 2015) can be used for supporting employability development. Its four measurable areas are concern, control, curiosity and confidence.

Students need to learn how to communicate to employers that they got skills (Flynn 2013) and how to evidence their achievement. Various types of skills inventories have been developed such as the Employability Skills Profile online platform of the University of Worcester, UK. Some institutions issue formal certificates. The UK HE Achievement Report (also serving as diploma supplement within the European HE Area 2010) was introduced in 2008 and is being issued by 18 institutions. This comprehensive online report evidences skills and knowledge based on the university degree and also extracurricular activities, which are not included in the traditional course transcripts. 90 institutions are implementing the report or planning to by 2015, and are supported in their efforts by the UK HE Academy.

**POSTGRADUATE SPECIFICS**

Employability-related skills for taught postgraduates mirror the ones for graduates but at a higher level (Jones and Warnock 2014). In addition to subject knowledge, employers recruit postgraduates for their self-motivation, resilience (Barber et al. 2004), advanced numeracy, analytical thinking, communication abilities, language and problem solving skills (Wilson 2012). A concern of employers is the lack in leadership skills, work experience and market understanding (CIHE 2010). Like graduates, UK postdocs report they did not feel prepared to influence others (Vitae 2013c). UK doctoral graduates are naturally prepared for research posts, but less so for teaching. Moreover, they are not ready for employment outside academia (Wilson 2012), even though more than 60% of UK doctoral graduates in the biological and biomedical sciences leave academia (Vitae 2013c). These graduates are aware of being unprepared, and they experienced difficulties in obtaining career advice during their doctoral studies (Vitae 2013a). This might be in part due to supervisors not being recognized for providing career developmental support within their work responsibilities (Vitae 2013b).

Postgraduate education is informed by the Vitae Researcher Development Framework, based on the Vitae Researcher Development Statement (Vitae 2010) that focuses on developing world-class researchers. In acknowledgement of this limitation, lenses for the Framework have been introduced for foci on e.g. employability, enterprise and teaching. The lenses state learning outcomes and where research skills are transferable in the lens contexts, as well as examples for skill development. The teaching lens (Vitae 2012b) is aligned directly with the UK HE Academy UK Professional Standards Framework. Areas of activity, core knowledge and professional values in the context of teaching and supporting learning are outlined as well as benchmarks for professional development and portable individual recognition of expertise. The employability lens (Vitae 2012a) addresses knowledge, skills and attributes that employers outside HE research value, such as project management, perseverance and innovation.

Entrepreneurialism is also promoted via business plan competitions such as the Biotechnology Young Entrepreneurs Scheme (YES). Experiencing the working environment outside academia through internships is encouraged, and some are facilitated by grant bodies (Wilson 2012).

**FINAL THOUGHTS**

It is crucial for learners to experience the actual work environment in addition to developing subject, transferable and career skills through the curriculum with as much authentic learning as possible, as well as allowing enough time to engage with formative and institutional provision. Some undergraduate courses offer the opportunity to formally sandwich work placements into their time of studies. Work place experience can also be gained outside study time or during an interruption of study. Work-readiness can be developed in placements that are not necessary related to the degree subject. Importantly, the learner has to actively engage with this development, to interpret and reflect on what was learned, and to take it forward (Cooper, Orrell and Bowden 2010). Personal tutors and supervisors are instrumental in supporting this process, as well as in finding work opportunities by providing academic references, which is challenging and time-consuming at times. Postgraduates also need to be given the time to develop skills away from the laboratory bench, desk or conference. Education at a doctoral level is more than getting the next paper.

Students at all levels should be encouraged to engage with learned societies for subject-specific career enhancement. Those learned societies like the UK Society for General Microbiology offer affordable undergraduate and postgraduate membership, which allows access to careers advice, networking opportunities and developmental grants. There are usually dedicated timeslots for networking, job shops or curriculum vitae clinics at conferences organized by societies.

Academic staff engagement with the employability agenda is limited by the bias in HE institutional recognition towards research (UKCES 2008, 2010; Lowden et al. 2011). Yet, very little on top of the activities that develop subject skills will also develop employability skills, if all is aligned and explicitly signposted to the learners (Yorke 2010). This also ensures that crucial course content required for professional/statutory/regulatory body accreditation is not lost. In fact, separating the development of graduate attributes from subject knowledge through a framework of extracurricular sessions is rarely successful (Pegg et al. 2012).

Most students are regularly using social media and consider it an essential part of life without necessarily reflecting on it in the context of their employability. Yet, students are advised to be careful with and to look after their digital/social media footprint. Go-Gulf.com surveyed employers and found 43% had not hired a candidate based on their online presence. According to Reppler.com, half of employers search Facebook, Twitter or LinkedIn upon receiving an application, and 69% rejected candidates due to their footprint, but 68% were also inspired to hire them. Career services staff is qualified to guide students in how to use/maintain a footprint conducive to employment.

The transition from learner to employee is a challenge for both graduates and postgraduates, but by embedding the development of subject, transferable and career skills in the curriculum, and by tailoring individual support, this transition can be
made smoother and more efficient for the benefit of the learners and the employers.

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