

Learning & Employability

SERIES TWO

2

Employability and doctoral research postgraduates

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Learning and Employability Series 1 and 2

The Learning and Employability series are primarily intended for staff in higher education institutions who are considering the enhancement of student employability. The publications will also be of interest to colleagues new to the area as well as those who are already engaged in developing employability and who wish to broaden their understanding of the topic.

The series comprises 12 publications:

FEBRUARY 2004 (SERIES 1)

1. **Employability and higher education: what it is – what it is not** (Mantz Yorke)
2. **Employability: judging and communicating achievements** (Peter Knight and Mantz Yorke)
3. **Embedding employability into the curriculum** (Mantz Yorke and Peter Knight)
4. **Reflection and employability** (Jenny Moon)
5. **Widening participation and employability** (Geoff Layer)
6. **Entrepreneurship and higher education: an employability perspective** (Neil Moreland)

JUNE 2004 (SERIES 1)

7. **Employability and work-based learning** (Brenda Little and ESECT colleagues)
8. **Pedagogy for employability** (The Pedagogy for Employability Group)

SEPTEMBER 2005 (SERIES 2)

1. **Work-related learning in higher education** (Neil Moreland)
2. **Employability and doctoral research postgraduates** (Janet Metcalfe and Alexandra Gray)
3. **Employability and part-time students** (Brenda Little)
4. **Ethics and employability** (Simon Robinson)

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The Learning and Employability series will continue to be extended by the Higher Education Academy and will reflect changing challenges and priorities in the relationship between higher education and the many work opportunities likely to need – or benefit from – graduate or postgraduate abilities. Some titles in Series 1 have been rebranded and republished. We welcome suggestions for new titles in the series.

The views expressed in this series are those of the authors and not necessarily those of the Higher Education Academy.

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I. Introduction

'Postgraduate study is fundamental to the development of higher level skills and the preparation of people who will engage with the problems of the next generation. The process of achieving a doctorate develops an enquiring mind, problem-solving abilities and the ability to assimilate, articulate and defend new ideas. This intensive training equips the students to rise to challenges and be flexible and adaptable; all valuable attributes for today's knowledge-based environment. The aim is to make postgraduate study attractive to able graduates and prepare them for creative and leadership roles in industry, academe and the public sector.'

Professor Sir Gareth Roberts FRS, FREng
President, Wolfson College, University of Oxford

This publication is one in a series of publications on 'Learning and Employability'. It is for anyone who is engaged in running doctoral research degree programmes, particularly supervisors. The intention is to demonstrate the relevance of employability for doctoral researchers (PhD is used throughout the document as a shorthand for all doctoral candidates), and what can be done in Higher Education Institutions (HEIs) to support the development of employability.

Until recently, doctoral graduates have been a neglected cohort in terms of explicitly developing their employability, particularly for employment outside the academic field. Many academics have assumed that PhD researchers have made a vocational commitment to become academics. However, at least half of PhD graduates move out of academia after they finish their PhD degree.

Although being employable is primarily a benefit for researchers who wish to enter or stay in the employment market, whether this is in academia or not, this guide illustrates the importance of developing the employability of all PhD researchers irrespective of their career intentions, including that of international researchers who are intending to return to their country of residence. The guide also shows that this process can be integral to and beneficial for the research studies.

The publication presents an overview of the importance of postgraduate researchers to the nation's economic health, the nature of the PhD qualification and where PhDs are employed. It explores the synergy between the research degree programme, the development of skills and PhD graduates' subsequent employability. It highlights how recent national initiatives, particularly the use of personal development planning (PDP) within research degree programmes, have recognised these inter-relationships, and it provides a checklist of how institutions, research communities and particularly supervisory teams may wish to support the development of researchers' skills and hence their subsequent employability.

2. Preview of key points

- A highly skilled workforce is central to the achievement of a knowledge-based economy.
- PhD graduates have the potential to contribute to all sectors of the economy; they are employed beyond the traditional destinations of academia and research-related occupations.
- Research training and employability are not mutually exclusive: the process of obtaining a PhD degree requires a wide range of skills and competencies that are valued by employers.
- The supervisory team can play a crucial role in assisting PhD researchers to identify their development needs and reflect on their personal progress alongside their research progress.

3. Postgraduate research education and the economy: an overview

The changing nature and patterns of work over the last thirty years have been the subject of much policy and media debate. Improving the nation's skill base is central to the government's efforts to modernise the national economy and to ensure that the UK can compete globally. Politicians, employers and social commentators alike have asked whether there will be enough work in the future, and whether that work will be radically different from what has gone before.

Changes in employment structure are closely tied up with the development of the economy more generally: employment levels depend essentially on the output of goods and services and the technologies used to create them. It has been argued that rapid technological change, increased global competition, and product and service requirements by both consumers and producers, have increased the demand for skills over the last three decades. This concern has been recognised in the present government's skills strategy.

The government's Pre-Budget Report 2004 and supporting documents (published in advance of the 2005 budget) discuss how intensified international competition, accelerated technological change and changing patterns of consumer demand are set to increase further the importance of skills. Changes in consumer demand will mean declining markets in some areas, but expanding markets elsewhere. Trade liberalisation will increase competition, but will also open up new markets for business.

It is argued that these increased competitive pressures mean that UK firms now need to move towards higher value product markets: that a shift from competing on relatively low costs to competing on unique value and innovation needs to take place (Porter and Ketels 2003, p.5). If UK firms are to succeed in these higher value-added markets they will need to take advantage of technological change, new production techniques and a more highly skilled workforce.

Some differentiation needs to be made, however, between the rhetoric and the reality of what is taking place in the skills debate within government and in respect of the competitive strategies of firms. Some organisations do suffer from external recruitment problems that are due to a lack of job applicants with the required skills, qualifications or work experience. Some organisations also suffer from internal skills gaps, which are to be found where a significant proportion of existing staff in a particular occupation lack full proficiency in their current job (IER 2000). However, organisations that recognise that they have skills gaps acknowledge that these are partly due to their own failure to train and develop staff.

There is some disagreement in political discourse about the levels and types of skills shortages suffered by the UK economy. However, most would agree that there is a need for further investment in skills acquisition at all levels if improvement in long-term economic performance is to be achieved.

On the employment front a generally optimistic picture emerges for the labour market over the coming decade. The Institute for Employment Research (IER 2004) says that employment is expected to continue to rise at about 0.5 % per year, resulting in over 1.3 million additional jobs over the next decade. However, this forecast does not take into account variations across industrial sectors, occupational groups, gender and geographical regions.

It would appear that employment patterns within the economy will continue to change over the coming years. The IER (2004) predicts that higher skill sectors, such as business, professional and personal services, and health and education will account for more than 53% of the workforce in 2012, compared with 42% in 2000. Though exact figures are hard to determine, such trends have clear implications for the sectors in which jobs will be concentrated and for the skills likely to be demanded of the workforce. The type of analysis undertaken by the IER suggests that it is the more highly skilled occupational categories, such as managerial, professional and technical, that will see the greatest expansion, whether in the form of new posts or of mid-career progression. It is likely that people who have engaged in continued professional development (CPD), possibly through obtaining higher level qualifications, will fill such posts. The recent growth in popularity of the professional doctorate, a practice-based research doctorate (see UKCGE 2002), may be partly in response to the recognition of this need to up-skill.

The growth of knowledge-based work favours skills such as problem solving, communication and collaboration. Individuals will also need to be increasingly flexible and adaptable – learning new skills and being able to move between organisations and sectors.

In March 2000, at the Lisbon European Summit, Heads of State and Government set an ambitious goal for the European Union: to become the 'most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion by 2010' (EC 2000). To achieve this, the EU member states have set a target to increase investment in research and development (R&D) towards an average of 3% of GDP in the same time frame. (The UK has set a target of 2.5%.) Should the EU reach its 3% target, the European Commission (EC 2003) estimates that this will increase the demand for academic and non-academic researchers by 700,000, in addition to the number needed to replace those who retire.

However, an annual survey (UCEA 2002) points to serious problems in recruiting and retaining academic staff within the UK academic sector. The survey highlights trends and provides evidence of a worsening situation year on year since 1998. It points to particular difficulties in recruiting academic staff in the areas of computing/IT and business subjects such as accountancy/finance, management, law and economics, as well as engineering, biological sciences, education, and the professions allied to medicine. These findings are supported by several other studies that indicate the importance of addressing the current situation. For example, Sir Gareth Roberts' review of the supply of scientists and engineering 'SET for Success' (HM Treasury 2002) made it clear that 'ensuring that universities are able to recruit and retain quality staff is vital to the UK's future supply of highly-skilled scientists and engineers.'

Scientific researchers almost invariably begin their research training in higher education. Not all development work requires extensive research training, but often the research elements of R&D in academia and in industry require research experience that is generally gained through a PhD. Postgraduate research study is therefore fundamental to the development of the highest level of skill in science and engineering. It develops specialist knowledge and trains researchers in the techniques and methods of scientific research.

A recent report by the British Academy (2004), the educational body for the humanities and social sciences, highlighted the crisis in recruiting PhD researchers, noting a shortfall in accountancy, business and management studies, economics, education, European languages, law, and creative and performing arts. The report went on to argue that the arts, humanities and social sciences provide high level skills and ground-breaking research that are essential to a knowledge-based economy.

The British Academy argued that there was widespread misunderstanding about the contribution made by the arts and humanities. These broad subject areas are marginalised by a belief that the knowledge they enhance is less important than what is loosely defined as 'science' – although natural scientists themselves rarely take this view. Finally, these disciplines pursue methods of enquiry that often do not permit predictable and measurable returns. Unlike more 'scientific' disciplines, they do not lend themselves to being easily measured as public service targets, but this does not make them less important to the economy and society.

4. The purpose of the PhD qualification

The role and nature of the PhD has been the subject of ongoing debate since its introduction. The tension between the PhD as part of the cycle of education and the PhD as an academic apprenticeship has been much argued over (OECD 1987). There are tensions between providing the training to become an effective researcher and the need to make an original contribution to knowledge, and between the PhD degree as an education (which promotes a broad understanding and capability) and as a training in the development of specific skills. The PhD occupies an uncomfortable position as both the highest degree awarded within higher education (if higher doctorates are excluded) and the first stage of an academic career.

If the knowledge-based economy is to succeed, then all sectors will need the types of higher level skill that come from postgraduate study. But possession of a PhD does not automatically improve employment prospects. The area of study, the state of the economy, the state of the relevant industrial sector, a researcher's ability and drive, the type of job they want, luck and persistence, all play a role. The evidence suggests that some organisations have their doubts about employing PhD graduates because they are older and therefore more expensive – and more independently minded. Others favour PhD graduates because of their maturity, knowledge and practical experience:

'We don't set out to employ PhD graduates specifically – we take the best candidates available. However, we've found that PhD graduates have a combination of maturity and autonomy that is more useful for our work than engineering graduates with a similar length of experience in industry.' (General Manager, private engineering firm.)

However, there are also complaints from employers, particularly in research industries, that the 'quality' of PhD researchers is too low and/or declining. The criticism relates to their broader interpersonal and management capabilities rather than to their technical and research abilities. Securing higher calibre entrants to PhD programmes will not in itself create PhD graduates who are any more attractive to employers in education and business than today's PhD graduates.

'In general, employers' opinions of PhD students' scientific research and technical skills [are] generally very high, while interpersonal skills and students' awareness of these abilities, are felt to be less good.' (HM Treasury 2002)

Except for a limited range of subject areas, such as the biosciences, there is little evidence that employers are prepared to pay an initial salary premium for a PhD qualification. However, over the long term the evidence, at least for researchers in science, engineering and technology, is that a PhD qualification tends to improve career and earnings potential in the long term (HM Treasury 2002).

A number of developments have taken place in UK Higher Education recently that have impacted on postgraduate research degree programmes. Perhaps the most influential is the report by Sir Gareth Roberts – ‘SET for success: the supply of people with science, technology, engineering and mathematic skills’ (HM Treasury 2002). The report made several recommendations that relate to the development of employability in postgraduate researchers, particularly embedding transferable skills training within research degree programmes:

The report recommends that ‘. . . the training elements of a PhD – particularly training in transferable skills – need to be strengthened considerably . . . HEFCE and the Research Councils should make all funding conditional on students’ training meeting stringent minimum standards . . . [research degree programmes] include the provision of at least two weeks dedicated training a year, principally in transferable skills’ (Recommendation 4.2). This recommendation has been accepted by the government and, in the case of students funded by the Research Councils, accompanied by additional funding for training.

The ethos of embedding skills development within research degree programmes has also been recognised by the Quality Assurance Agency in its revision of Section One of the Code of Practice (QAA 2004). Precept 18 of the code states that:

‘Institutions will provide research students with appropriate opportunities for personal and professional development.’

The Code recognises that PhD researchers ‘need support to develop the research, subject specific, communication, and other skills they require to become effective researchers, to enhance their employability and assist their career progress after completion of their degree. Development and application of such skills is also understood to be significant in the research graduate’s capability for sustaining learning throughout his or her career, whether in an academic role, or in other employment.’

However, the Code also recognises the differing needs of individual postgraduates, arising from their diversity. Researchers embark on PhDs for a wide range of motivations, and not necessarily for their career prospects. In a study undertaken for the DfES of the recruitment and retention of academic staff (DfES 2005), quantitative surveys of academic staff and researchers explored the reasons for undertaking PhD research. The reasons given were:

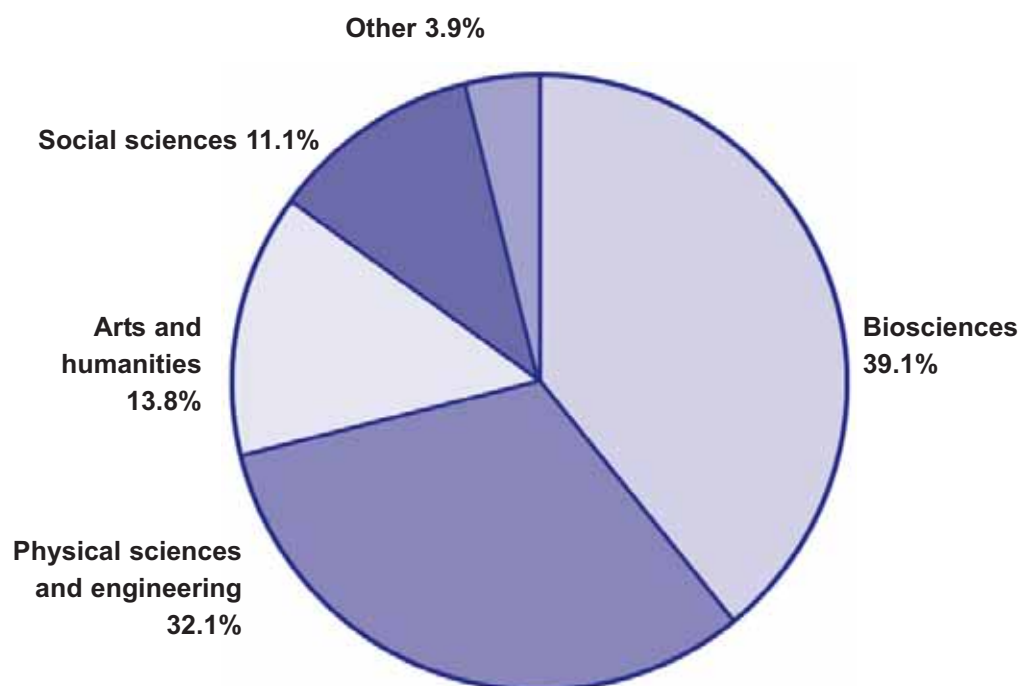
- from an interest in the subject (87% of respondents)
- from an interest in research (82%)
- to help them get the type of job they wanted (63%)
- because they are considering an academic career (44%)
- to improve their prospects in an existing career (43%)

This diversity of motivations has been reflected in the growth of part-time and mature PhD researchers.

5. What subjects do PhD researchers study?

The UK GRAD Programme publication, 'What Do PhDs Do?' (UK GRAD 2004b) shows that the number of PhD graduates from UK universities has recently expanded dramatically, with 31% growth over the period 1999-2003: over 12,500 people were awarded doctorates from UK universities in 2003. However, the majority of this growth has come from an increase in the number of overseas researchers (up 47% since 1999) and in that of part-time UK-domiciled researchers (up 72%). The growth in the number of part-time researchers is such that they now represent about a quarter of all PhD researchers. The number of full-time UK-domiciled PhD graduates has, in contrast, grown by only 11% over the same period. It is likely that, in the future, UK PhD numbers could start to fall as the impact of undergraduate student debt, tuition fees and low (or non-existent) PhD stipends makes postgraduate study increasingly unattractive.

In terms of subjects studied by UK-domiciled PhD researchers, the physical and biological sciences dominate, with over 70% of the total PhD graduates. Social sciences, the arts and the humanities together make up only 25% of the total population. The distribution of PhD graduates amongst subject areas is shown in Figure 1.



Note: Pie-chart and other data are extracted from UK GRAD (2004b) and are based on HESA's 'Destinations of Leavers from Higher Education 2002/03'.

Figure 1: Subject areas of PhDs awarded to UK-domiciled graduates in 2003

6. Where are PhD graduates employed?

Although the education sector is the largest employer of PhDs immediately after graduation, PhD graduates can be found in all employment sectors (Figure 2): roughly a half of all PhD graduates take employment outside higher education immediately after graduating. Of the 48% of PhD graduates who remain in UK education, 22% work in postdoctoral positions and 17% are employed as teachers or lecturers in higher education. The rest work mainly in administration and as teachers in schools.

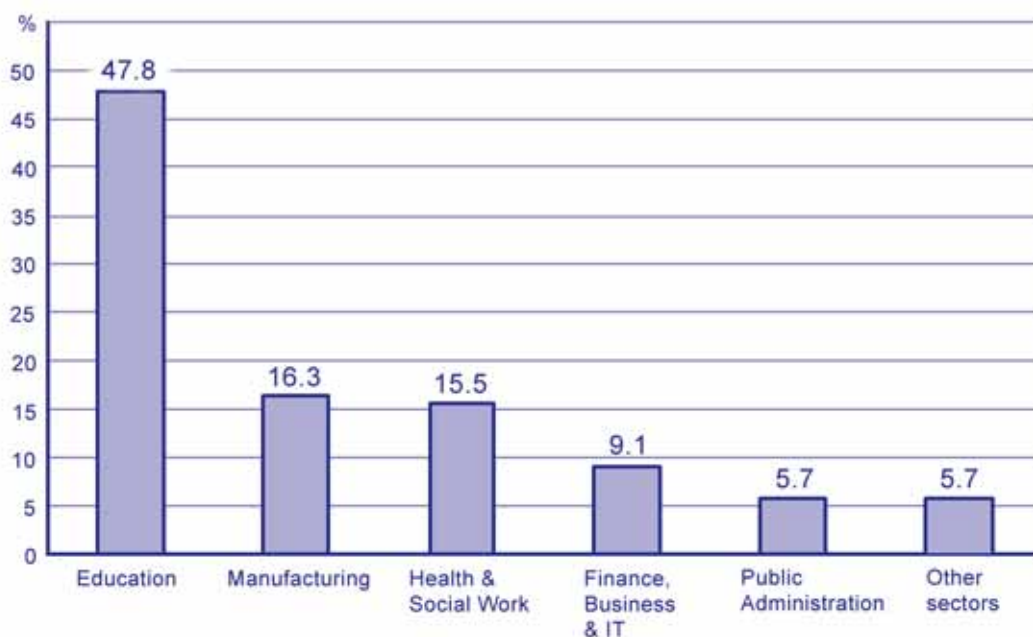


Figure 2: Employment sectors entered by UK-domiciled doctoral graduates, by Standard Industrial Classification

Not surprisingly, employment sectors differ by discipline (Table 1). The educational sector is by far the largest employer at 70% of all PhD graduates in the arts and humanities and 66% of PhD graduates in the social sciences, primarily as teachers and lecturers. Only around 15% of PhD graduates in these disciplines secure postdoctoral research positions. By contrast only 40% of biological sciences, physical sciences and engineering PhD graduates remain in higher education, two thirds as postdoctoral researchers. This variance in postdoctoral research positions is arguably a reflection of the lack of supply of funded postdoctoral research positions in the arts and humanities and the social sciences, rather than one of demand. Many arts, humanities and social science PhD graduates use teaching positions as a way of maintaining their research interests.

Employability and doctoral research postgraduates

| | Working anywhere in education | Postdoctoral researcher in HE | Teacher/lecturer in HE | Other key occupations | % |
|------------------------------------|-------------------------------|-------------------------------|------------------------|------------------------------------------|-----|
| Total | 48% | 22% | 17% | | |
| Arts and humanities | 70% | 15% | 30% | Marketing, sales and media | 8% |
| Social sciences | 66% | 14% | 39% | Commercial, industrial and public sector | 12% |
| Biological and biomedical sciences | 40% | 26% | 8% | Non-academic research and development | 18% |
| Physical sciences and engineering | 40% | 24% | 6% | Non-academic research and development | 19% |

*Notes: All percentages are of total UK-domiciled PhD graduates.
Columns 3 and 4 are subsets of column 2.*

Table 1: Types of work being undertaken in the UK on 1 January 2004 by UK domiciled PhD graduates

Given the numbers of PhD graduates who progress their careers through higher education, it is critical for the sustainability of the UK academic base for institutions and supervisors to take cognisance of the importance of developing their employability, not least to prepare them for work within academia.

'If you want somebody who is a critical thinker, a problem solver, a communicator, and able to handle a serious and very difficult project . . . that's what the PhD programme should be about. And that's maybe what you want in your organisations – that's certainly what I want in my organisation.'

Professor Sir Kenneth Calman, Vice Chancellor, University of Durham (*UK GRAD Programme, 2004a*)

7. Research training and employability are not mutually exclusive

So what exactly is employability? Employability, is more than a set of skills. It is: 'A set of achievements – skills, understandings and personal attributes – that make graduates more likely to gain employment and be successful in their chosen occupations, which benefits themselves, the workforce, the community and the economy.' (Yorke 2004)

Employability is different from employment: being employed means having a job; being employable means having the qualities for maintaining employment, planning for progression and managing the next career step. This definition of employability should be equally applicable all PhD researchers, including part-time and mature researchers.

Postgraduate researchers are required to be independent, autonomous learners. The research, communication, time management and other organisational skills required and acquired during a PhD lay the foundations not only for a successful PhD, but also for sustained learning throughout their lifetime. Postgraduate researchers need to recognise the extent to which undertaking a PhD develops and extends their existing capabilities. They need to be encouraged to recognise the value of their skills and their competency levels, enabling them to take ownership and responsibility for their own learning, during and after their programme of study.

Researchers undertaking a PhD need support to reflect on their learning and develop their skills if they are to enhance their research competence, their employability, and assist their career progression after completion of their degree. These researcher skills may be present on commencement (as for example in the case of some mature researchers), explicitly taught, or developed during the research programme. However, many PhD graduates are unaware of the skills they develop during their studies.

It is accepted as good practice for researchers generally to reflect on their learning and training needs, and the higher education sector has agreed national guidelines (QAA 2000), recommending the use of personal development planning (PDP) for all higher degree programmes.

PDP is 'a structured and supported process undertaken by an individual to reflect upon their own learning, performance and/or achievement and to plan for their personal, educational and career development.'

It is intended to help students:

- become more effective, independent and confident self-directed learners
- understand how they are learning and relate their learning to a wider context
- improve their general skills for study and career management
- articulate their personal goals and evaluate progress towards their achievement
- and encourage a positive attitude to learning throughout life.

CVCP, CoSHEP, SCoP and QAA policy statement on Progress File for Higher Education (QAA 2000)

The concept of reflecting on progress is integral to research studies. It is a small step to extend this reflective practice to the progress of personal development. PDP techniques offer one route for developing reflective skills and can fit naturally into the process of researching. However, to benefit from these synergistic relationships, the process of PDP needs to be an integral and supported activity within the supervisory process, which encourages PhD researchers to reflect on the progress of their personal development alongside the progress of their research project.

The use of PDP within research degree programmes is embedded in the QAA revised code of practice for research degree programmes (QAA 2004). This states that:

‘Each student’s development needs will be identified and agreed jointly by the student and appropriate academic staff, initially during the student’s induction period; they will be regularly reviewed during the research programme and amended as appropriate’ (Precept 19),

and

‘Institutions will provide opportunities for research students to maintain a record of personal progress, which includes reference to the development of research and other skills.’ (Precept 20).

Many institutions are implementing PDP for postgraduate researchers. In a national review (UK GRAD and others 2004) of emerging practice, respondents cited multiple benefits:

for the individual researcher

- developing skills and completing research
- empowerment and taking control of learning
- supporting career management.

for the supervisory team and supervision process

- monitoring progress, developing researchers' skills and completing the research
- enabling easier supervision of researchers who take ownership for their own personal development
- providing a structured framework for the supervisory process and for discussions about personal development.

for the research project

- developing researchers' project management skills, including time management, setting goals and defining expectations
- improving the effectiveness of the research by encouraging researchers to be overtly aware of the appropriate skills.

for the institution

- providing a mechanism for training needs analysis and profiling available training programmes
- meeting external and internal requirements, including completion rates
- meeting the strategic vision of creating a learning environment.

However, there are also key points to be borne in mind when making PDP a meaningful process for all stakeholders.

- PDP works best when it is integral to and embedded within existing review processes.
- Researcher ownership of the process is crucial.
- Confidentiality and clarity of purpose become critical in the dilemma between researcher ownership and institutional monitoring.
- There is a need to address staff development issues so that supervisors can support their researchers effectively in the process.
- Resources have to be identified and provided if PDP is to be implemented successfully.
- Minimum requirements should be established for good practice.

The use of PDP in research degrees should benefit not only the development of the researcher, but also the researcher's subsequent employability. Many employers today require employees at all levels to take responsibility for their own personal development and career planning. Gone are the days when a new recruit would be guided through a career with a single employer: employees are expected to contribute to the success of an organisation from the start and to take advantage of, and create opportunities for, their own development. For example, newly appointed postdoctoral researchers are expected to 'hit the ground running' and to make a contribution to their department's submission to the research assessment exercise.

8. What skills do PhD graduates develop?

The UK Research Councils (RCUK) play an important role in setting standards and identifying best practice in research training. These bodies, in conjunction with the UK GRAD Programme and the HE sector, have produced a Joint Statement on 'Skills Training Requirements for Research Students' (here abbreviated to JSS), which sets out the competences that they expect their funded doctoral researchers to have on completion of their programmes (see Appendix and RCUK 2001). This provides a framework covering:

- generic research skills
- research management
- personal effectiveness
- communication and team-building
- career management.

The JSS has become a useful document in raising the awareness of PhD researchers and other stakeholders regarding the competences expected of PhD graduates and their employability. For example, the QAA has incorporated this statement into its revised Code of Practice on postgraduate research degrees. Many institutions are using the JSS to map their provision of development and training opportunities for PhD researchers and as a framework for PDP processes and the identification of development needs.

At the start of their PhD studies, researchers will have different levels of competency in these skills. During their research degree programmes researchers will implicitly develop both the range of their competences and their level of competency. The Code of Practice and other recent initiatives focus on making this development more explicit within research degree programmes.

Most academics who supervise PhD researchers are also aware of the guidelines laid down by the Research Councils and other funders regarding the development of skills in research training. There is a major emphasis on the provision of a broadly-based research training programme. Each Research Council overlays the JSS with its own specific requirements. For example, the Arts and Humanities Research Council requires universities to ensure that their doctoral award holders 'are provided with a good standard of training in research skills and other key skills, in order to enable them to complete in due time a thesis that is a high-quality contribution to knowledge and understanding in their field, and also to help them develop key transferable skills necessary in their subsequent careers, whether in academic employment or in other areas.' (AHRC 2004)

Whatever paths PhD graduates may follow, there will be clear advantages for them if they are aware of the general research skills and transferable employment-related skills that they have acquired and are able to articulate them. Employers seeking employees in higher skill occupations want them not only to have some knowledge about the job but

also to have a willingness to learn and to demonstrate self-management and communication skills, team-working ability and interpersonal skills. Such achievements are clearly compatible with the training involved in completing a PhD: there need be no tension between the concept of employability and research training.

Even when employed in academia, a PhD graduate will normally have to fulfil a range of functions beyond their research activities, for example in teaching and administration. Sir Gareth Roberts in his report (HM Treasury 2002, para 4.49) expressed concern that 'PhD study and postdoctoral work is (sic) not particularly good training for would-be academic staff, because of its near exclusive focus on research and its lack of preparation for other elements of the academic role including teaching.'

Employers of researchers in both higher education and business seek a balance of education and training, whilst employers whose primary focus is not research tend to value the broad educational elements over training in specific scientific skills or research techniques.

Today's PhD researcher is the highly skilled academic or company researcher of tomorrow and will need interpersonal and management skills to fill these roles effectively. Academics should, and often do, provide broadly-based training that enables researchers to think through how they can use their existing knowledge and skills in different contexts and apply them to a variety of problems – and, progressively, to identify their own needs for training.

In the changing world of employment, most PhD researchers also will need to give greater attention to career management. They will need to be able to research information on opportunities for employment, and to develop further their networking and negotiation skills, critical self awareness, evaluation of personal and career development needs, and the capacity to promote and market themselves – not least to be successful within the academic sector.

9. Roles and responsibilities of universities

The postgraduate research degree environment is changing. The implementation of the Roberts recommendations for PhD degree programmes (HM Treasury 2002), the QAA revised Code of Practice (QAA 2004) and the RCUK JSS (Appendix 1) are of assistance to institutions in the process of evaluating their research degree programmes. Institutions are not only looking at how to support researchers to complete their PhD successfully, but are also working to provide opportunities to develop their researchers' communication skills, teaching skills, and the management and commercial awareness needed to equip them for the professional demands of modern academic life and wider employment as researchers.

It is not expected that the supervisory team should be solely responsible for the enhancement of PhD researchers' employability. The days of PhD study in the form of a

'master/apprentice' relationship have gone. Ultimately, it is the responsibility of the institution to ensure that postgraduate researchers are provided with appropriate training within the research degree programme.

HEIs have a vital role to play in educating their researchers about the benefits of such personal and professional development. Most research postgraduates need support to develop the research, subject-specific, communication and other generic skills they require to become effective researchers: competences essential for successfully completing a PhD. Even mature researchers will need to develop skills essential to complete their PhD. For example, many researchers studying for professional doctorates are very successful, highly skilled individuals who wish to conduct research based on their current employment practice. However, they may still lack specific research skills, such as research methodologies, writing papers, preparing their thesis, and giving presentations to an academic audience.

For researchers to benefit from their research training, universities need to ensure that there are processes for assessing the training needs of individual researchers, and assessing progress on a regular basis, preferably with the supervisory team. Reflecting on, and developing, transferable skills should be an important part of any research degree programme.

It is expected that a range of methods will be used to support learning and that they will be sufficiently flexible to address individual needs. For example, different mechanisms that can be used to support learning include self-direction, supervisor support and mentoring, departmental support, workshops, conferences, elective training courses, formally assessed courses and informal developmental opportunities.

However, universities are not expected to do this alone. The government, through the UK Research Councils, recognises that there is much to be gained by supporting the higher education sector in developing the employability skills of PhD researchers through building networks and sharing good practice. As well as funding the Roberts recommendations for RCUK funded researchers, the Research Councils also fund the UK GRAD Programme.

The UK GRAD Programme is a national organisation that promotes the value of personal and professional development for researchers, both for their research studies and their subsequent employability. The programme provides information on latest policy developments through the website (www.grad.ac.uk), national and regional events, and about how GRAD can support universities, supervisors, employers and researchers. It provides access to resources, such as training materials; national reviews, for example on the use of PDP; and information on the destinations of PhD researchers in 'What Do PhDs Do?'. The programme is based around a network of regional Hubs, based in institutions, which operate on a regional basis to share good practice and facilitate networks to support the delivery of personal and professional development for researchers.

As a result of these initiatives, many institutions are actively engaged in embedding opportunities for skills development into research degree programmes. These opportunities will depend on the needs of the researchers, the research and the discipline. The QAA code of practice stresses that the emphasis in training should be on quality, relevance and timeliness.

10. Roles and responsibilities of supervisors and supervisory teams

There is widespread recognition in Higher Education of the intrinsic educational value of helping researchers to develop during their degree studies the skills and behaviours they will need to further their careers. In a PhD degree this is carried out principally in the context of the relationship between the researcher and what is now normally a supervisory *team*.

The function of the supervisory team in supporting and mentoring its PhD researchers is vital in developing them as capable researchers. It is the supervisory team that is best placed to develop a PhD researcher's judgement about research method, and to stimulate creativity and analytical thinking. Good supervisory support also plays a role in helping researchers identify suitable training and in encouraging them to make the most of such opportunities.

All PhD researchers will normally receive through their supervisory teams, either directly or indirectly, research-focused training covering matters such as research methodologies, subject-specific knowledge, and generic research skills such as project management.

The PhD training is further delivered through the informal and formal relationships between the researcher and other members of the research group and beyond. Particularly in larger research groups, postdoctoral researchers can play an important part in developing a PhD researcher's skills. Such relationships also help counteract the isolation often experienced by those pursuing their PhD in the humanities and social sciences.

Developing this research 'culture' is a particular challenge for supervisors of part-time and 'distance' PhD researchers, where the researcher may have little physical access to the institution. However, providing opportunities to meet other researchers and create support networks, particularly at the start of the PhD, is very important in developing the broader research competencies, such as communication, team building and networking skills.

Researchers and their supervisory teams should also embrace the need to embed training in transferable skills into their PhD degree programmes. Emphasis needs to be given to training in transferable, non-technical skills and to giving individual PhD researchers more

control over the nature of their training. One route for PhD researchers and their supervisors could be through embedding the use of PDP within the normal practice of the supervisory process.

The UK GRAD Programme review of emerging practice on the use of PDP (UK GRAD and others 2004) found that staff in the sector felt that they would benefit from information or resources that provided positive arguments for PDP presented in 'research friendly' language and which built on processes already contained within the research degree programme.

However, the advising of researchers on training in more generic transferable skills such as team-working and communication skills can be difficult for many supervisory teams, with or without the use of PDP. This is particularly true for employment-related skills such as career planning, the writing of curricula vitae and interview techniques, especially if the researcher is considering moving beyond the academic environment.

This move towards a broader institutionally defined research degree programme creates the opportunity of providing support and guidance to the researcher that complements the activities of the supervisory team, for example, providing discipline-specific careers guidance through the Careers Service.

Careers Service staff and other guidance services, such as the UK GRAD Programme, can be of significant value in enabling PhD researchers to communicate their achievements both to their supervisors and to prospective employers. To plan effectively for their future PhD, graduates should have a clear understanding of their capabilities and limitations since this can provide a base-line from which to build future goals.

11. Characteristics of a PhD programme that are likely to enhance PhD graduates' employability

As this publication demonstrates, the process of completing a PhD degree should, as a matter of course, improve researchers' employability. This improvement can be increased by all parties being aware of how different aspects of the research degree programme can impact on skills development. The following checklists, for supervisory teams and institutions, indicate how all who are engaged in running research degree programmes may help PhD researchers to enhance their employability through developing the range of skills contained within the JSS. The checklists should be used not as a prescription but as a contribution to discussion amongst colleagues regarding how best to encourage the development of employability in their PhD researchers.

Checklist 1: Supervisory teams

Supervisory teams are crucial to supporting the development of researchers' skills and competencies throughout their degree and hence their future employability.

By supervisors informing PhD researchers of their responsibilities at the beginning of their programme the latter will develop their awareness of the importance of:

- recognising the value of developing their skills and having a commitment to their continued professional development
- maintaining self-discipline, motivation and thoroughness
- developing their research project management skills through setting goals, managing their time, planning effectively and maintaining satisfactory progress
- reflecting on and recording progress
- participating in development opportunities to meet identified needs.

During the research degree, supervisors can support researchers' skills development by:

- using regular contact to encourage them to construct coherent arguments and clearly articulate ideas
- supporting the development of their project management skills by monitoring progress of their research programme
- helping them to identify their own development needs and review development
- providing timely, appropriate and effective feedback on the researchers' work and progress, and encouraging them to respond constructively to feedback
- encouraging them to write clearly and in a style appropriate to purpose through the production of progress reports, papers and the thesis
- helping the researcher to develop their networking skills by facilitating opportunities to interact with others working in the field of research, for example, attending relevant conferences, introducing them to their academic networks
- raising their awareness of sources of advice on the range of career opportunities within and outside academia.

A supportive, high quality research environment, particularly through the contributions of

the supervisory team, will encourage PhD researchers to:

- be creative, innovative and original in their approach to research
- grapple with challenges that develop intellectual maturity and demonstrate flexibility and open-mindedness
- reflect in depth on their own learning about research as well as on research outcomes
- develop their verbal and written communication skills through presenting their research at progress reviews, as papers, at seminars, symposia and conferences, and ultimately the viva
- undertake teaching or other duties, which will broaden their communication skills, particularly with respect to supporting the learning of others, critically appraising the work of others and giving feedback.

PhD researchers who work within research groups have a particular opportunity to develop their teamworking skills, their ability to build good working relationships and being aware of the impact of their behaviour on others through their interactions with their colleagues.

The PhD researcher's involvement with a supervisory team can also provide a valuable grounding in the skills required to become, in due course, an effective research supervisor.

Checklist 2: Institutions

The institution itself has a role in the development of its PhD researchers. An introduction to the institution, its expectations and the facilities available helps to make postgraduate researchers aware of:

- the independence and responsibilities of researchers in becoming independent autonomous researchers who are also able to recognise boundaries
- the challenges that will typically face PhD researchers and how to draw upon guidance and sources of support, such as counselling and advice centres, as appropriate
- the institutional infrastructure, including that relating to support for learning and the development of skills
- the formal requirements for progression and the importance of keeping appropriate records of the outcomes of meetings and related activities

- the benefits of reflecting on and maintaining a record of personal progress, such as PDP and progress logs, that demonstrate the researcher's self awareness and their ability to identify their own development needs
- the career guidance services that can help researchers to be aware of the range of career opportunities open to them and how to present their skills, attributes and experiences through effective CVs, applications and interviews.

12. Conclusion

If the employability agenda is to move forward for PhD researchers, then institutions ideally need to have a strategic, institution-wide approach that has commitment and responsibility at senior level. Clearly there is a place for structured training and education, using the institution's experience to develop courses for the benefit of the individual learner. However, given both the individualistic nature of researchers and research projects, and the increasing need for people to take charge of their own learning throughout their lifetime, there would be value in placing more control of training in the hands of the researcher rather than in those of the institution.

Empowering researchers to take ownership of their personal and professional development in their research programmes is entirely consistent with broad programme aims such as the development of independent, autonomous graduates who are capable of producing original research and of contributing significantly to any organisation in which they find themselves.

Appendix

Skills training requirements for research students: joint statement by the UK Research Councils

The UK research councils play an important role in setting standards and identifying best practice in research training. This document (JSS) sets out a joint statement of the skills that doctoral researchers funded by the research councils would be expected to develop during their research training.

These skills may be present on commencement, explicitly taught, or developed during the course of the research. It is expected that different mechanisms will be used to support learning as appropriate, including self-direction, supervisor support and mentoring, departmental support, workshops, conferences, elective training courses, formally assessed courses and informal opportunities.

The research councils would also want to re-emphasise their belief that training in research skills and techniques is the key element in the development of a research student, and that PhD researchers are expected to make a substantial, original contribution to knowledge in their area, normally leading to published work. The development of wider employment-related skills should not detract from that core objective.

The purpose of this statement is to give a common view of the skills and experience of a typical PhD researcher, thereby providing universities with a clear and consistent message aimed at helping them to ensure that all research training is of the highest standard, across all disciplines. It is not the intention of this document to provide assessment criteria for research training.

It is expected that each council will have additional requirements specific to their field of interest and will continue to have their own measures for the evaluation of research training within institutions.

(A) Research skills and techniques – to be able to demonstrate:

1. The ability to recognise and validate problems.
2. Original, independent and critical thinking, as well as the ability to develop theoretical concepts.
3. Knowledge of recent advances within one's field and related areas.
4. An understanding of relevant research methodologies and techniques and their appropriate application within one's research field.

5. The ability to critically analyse and evaluate one's findings and those of others.
6. An ability to summarise, document, report and reflect on progress.

(B) Research environment – to be able to:

1. Show a broad understanding of the context, at the national and international level, in which research takes place.
2. Demonstrate awareness of issues relating to the rights of other researchers, of research subjects, and of others who may be affected by the research, e.g. confidentiality, ethical issues, attribution, copyright, malpractice, ownership of data and the requirements of the Data Protection Act.
3. Demonstrate appreciation of standard of good research practice in their institution and/or discipline.
4. Understand relevant Health and Safety issues and demonstrate responsible working practices
5. Understand the processes for funding and evaluation of research.
6. Justify the principles and experimental techniques used in one's own research.
7. Understand the process of academic or commercial exploitation of research.

(C) Research management – to be able to:

1. Apply effective project management through the setting of research goals, intermediate milestones and prioritisation of activities.
2. Design and execute systems for the acquisition and collation of information through the effective use of appropriate resources and equipment.
3. Identify and access appropriate bibliographical resources, archives, and other sources of relevant information.
4. Use information technology appropriately for database management, recording and presenting information.

(D) Personal effectiveness – to be able to:

1. Demonstrate a willingness and ability to learn and acquire knowledge.
2. Be creative, innovative and original in one's approach to research.
3. Demonstrate flexibility and open-mindedness.
4. Demonstrate self-awareness and the ability to identify one's own training need.
5. Demonstrate self-discipline, motivation and thoroughness.
6. Recognise boundaries and draw upon/use sources of support as appropriate.
7. Show initiative, work independently and be self-reliant.

(E) Communication skills – to be able to:

1. Write clearly and in a style appropriate to purpose, e.g. progress reports, published documents, theses.
2. Construct coherent arguments and articulate ideas clearly to a range of audiences, formally and informally, through a variety of techniques.
3. Constructively defend research outcomes at seminars and viva examination.
4. Contribute to promoting the public understanding of one's research field.
5. Effectively support the learning of others when involved in teaching, mentoring or demonstrating activities.

(F) Networking and team working – to be able to:

1. Develop and maintain co-operative networks and working relationships with supervisors, colleagues and peers, within the institution and the wider research community.
2. Understand one's behaviour and impact on others while working, as well as contributing to the success of formal and informal teams.
3. Provide and receive feedback, responding perceptively to others.

(G) Career management – to be able to:

1. Appreciate the need for, and show commitment to, continued professional development.
2. Be responsible for career progression by setting realistic and achievable career goals, while identifying and developing ways to improve employability.
3. Demonstrate an insight into the transferable nature of research skills to other work environments and of the range of career opportunities within and outside academia.
4. Present one's skills, personal attributes and experiences through effective CVs, applications and interviews.

Biographies

Dr Janet Metcalfe

Dr Janet Metcalfe (Director, UK GRAD Programme) is a UK-based independent educational consultant specialising in training and development of professional and personal skills for postgraduate research students.

Currently responsible for the UK GRAD Programme, which works through a network of regional university-based Hubs and a Centre for Excellence in Cambridge, and provides universities with access to resources, advice and networks to support the integration of personal and professional skills development into research degree programmes.

The vision of UK GRAD is to support researchers to complete their doctorates and make a successful transition into employment. To achieve this UK GRAD delivers a programme of national and local courses focusing on the empowerment of research students and provides a gateway (www.grad.ac.uk) to sources of support and advice for researchers and academics. Together with the UK Research Councils and AHRB, UK GRAD has developed a joint statement of the competencies required and acquired by doctoral researchers during the course of their studies.

Other projects include membership of the independent evaluation team for the New Route PhD and leadership of the recent joint UK Funding Councils' project to improve the quality of postgraduate research training, in conjunction with the UK Council for Graduate Education (UKCGE).

Dr Alexandra Gray

Dr Alexandra Gray is a self-employed researcher/writer and online tutor for the u21 Global MBA programme. She gained her doctorate in the early 1990s and has held lecturing positions, first at Leeds University Business School and then at the School of Textile Industries, University of Leeds, where she taught graduate and postgraduate classes in Human Resource Management and Organisational Behaviour, developing and introducing case study materials as a teaching resource to help students develop their transferable skills. Her research interests focus on the dynamics between industrial relations, competitive performance and new technologies. Current work has involved examining the impact of the national minimum wage on the West Yorkshire textile industry for the Low Pay Commission and an investigation of the changing nature of employment patterns and its implications for the economic and social welfare of the Yorkshire region.

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Enhancing Student Employability

There are many definitions of what it is to be 'employable' and views on the processes that develop this attribute. The Learning and Employability Series offers a wide range of perspectives on the employability of graduates, based on the premise that, in higher education, 'employability' is about good learning.

One of many definitions of employability is:

'A set of skills, knowledge and personal attributes that make an individual more likely to secure and be successful in their chosen occupation(s) to the benefit of themselves, the workforce, the community and the economy.'

ESECT was an initiative to support the higher education sector in its efforts to develop highly skilled, employable graduates who can contribute effectively to national prosperity in the 21st century.

ESECT consisted of individuals with extensive experience of employability issues. The team comprised representatives of stakeholder organisations including the National Union of Students (NUS), the Association of Graduate Recruiters (AGR), the Association of Graduate Careers Advisory Services (AGCAS), the Centre for Recording Achievement (CRA) and the Higher Education Academy. It drew on the expertise of key researchers and practitioners in the field including Professor Peter Knight, Professor Lee Harvey, Brenda Little and Professor Mantz Yorke.

ESECT was funded by the Higher Education Funding Council for England between October 2002 and February 2005.

The Higher Education Academy is progressing the work to enhance the employability of graduates developed in partnership with ESECT.

To find out more visit the Higher Education Academy Employability web pages:

www.heacademy.ac.uk/employability.htm



Higher education institutions are coming under increasing pressure to ensure their graduates have relevant employability skills. Institutions are also being encouraged to help students develop enterprise skills so that more graduates have the confidence and knowledge to set up businesses.

Senior managers and academics are looking for support at all levels to embed employability and enterprise into the higher education experience.

The Higher Education Academy is committed to helping institutions improve the employability and entrepreneurship of all students. The Academy has worked with a number of partners to provide a range of tools and resources in these areas.

The Higher Education Funding Council for England (HEFCE) funded the Enhancing Student Employability Co-ordination Team (ESECT) to help the sector engage with the employability policy. Its work began in September 2002 and finished at the end of February 2005.

ESECT dovetailed its plans with those of the Academy to provide a one-stop-shop on employability matters. The priority was to strengthen links with others committed to enhancing student employability.

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