



Researchers' skills and competencies

At a glance

In a rapidly changing global business environment, research, innovation and highly skilled employees are key to maintaining the competitive advantage of organisations.

Within UK higher education there are around 90,000 people studying for doctoral degrees and around 40,000 people employed as researchers. These people have high level technical skills and are also likely to have experience in effective communication, project management and team working. This experience will have been built up through a mix of training, individual study and practical work experience.

More than 50% of doctoral graduates work outside the education sector on graduating. Many more researchers seek work outside the higher education sector at different points in their careers.

This document is designed to enable employers and researchers to see at a glance the skills and competencies doctoral researchers and research staff can bring to an organisation. Against some of the competencies that are most frequently desired by employers, we list some of the relevant skills that researchers typically develop, then some real examples to show the kind of evidence that might be cited by researchers to evidence the development of those skills.

Competencies required by organisations	Skills doctoral graduates and research staff typically develop	Examples from researchers
Commercial awareness	Shows an understanding of the business context of research undertaken Has an ability to transfer skills and knowledge into a business or industry environment A knowledge of recent advances within ones industry or field and in related areas	Evidence and experience from real individuals 'Completing my PhD in small business environment with exposure to budgets, timesheets and cost implications.' 'Maximising limited resources available to gain maximum insight. Running jobs overnight and during weekends, affecting financials and delivery, equating to capacity planning in field operations management.' 'Bi-annual presentations of research findings to steering group with all the top chemicals companies represented and having to meet an expectation to deliver in a business context.'
Leadership	Understands the transferable nature of skills required to lead a successful project Displays the ability to build trust Has an understanding of how to motivate people to deliver in all situations even when the going gets tough	'Managing people directly and developing relationships between different groups, resolving disagreements and misunderstandings and encouraging and supporting others when they feel low.' 'Respecting the expertise of each and every team member and letting them get on with their jobs within the defined task.' 'Working in multicultural teams and being able to defuse potential conflict when being with the same people in enclosed, highly charged environments.'
Working with others (interpersonal skills)	Develop and maintain co-operative networks and working relationships Understand one's behaviours and impact on others Listen, give and receive feedback and respond perceptively to others	'Collaborating with many people during research projects; learning that being clear about responsibilities, expectations and deliverables at the beginning is paramount.' 'Working in teams with scientists from other countries; learning to respect people and cultural differences.' 'Building rapport to get people to answer sometimes sensitive questions, giving confidence that the information provided would be treated responsibly.' 'Balancing conflicting data and viewpoints and recognising the importance of enthusiasm. Asking questions to encourage participation and illustrate complex points.'
Written and oral communication	Construct coherent arguments and articulate ideas clearly to a range of audiences, formally and informally through a variety of techniques Contribute to promoting the wider understanding of one's research field Write clearly and in a style appropriate to purpose, e.g. progress reports, published documents, thesis, presentations	'Writing articles for both scholarly and commercial journals, press releases and being able to sell your research to a public audience.' 'Giving seminars, conference presentations, debating at staff meetings, meeting with directors of publishing houses and putting forward a convincing argument about your research or PhD.' 'Interviewing nearly 40 working journalists, cold calling many or initiating contact via e-mail. Being concise, yet persuasive enough to present research and convince them to take part in it.' 'Getting involved in a Women's Science Forum, organising events to promote science.'
Project management	Apply effective project management through the setting of research goals, intermediate milestones and prioritisation of activities An ability to summarise, document, report and reflect on progress Understand relevant health and safety issues and demonstrate responsible working practices	'Planning for and managing a presentation at major conference on PhD subject. Ensuring that every detail was covered in order to be able to handle challenging questions and defend argument and process.' 'Clearly defining tasks during PhD and communicating to all team members from scientists to technicians to ship officers and crew.' 'Planning and running jobs out of hours to gain sufficient data offering major financial savings and enabling the research to stay within a set budget and timelines.' 'Being able to communicate expectations, including timelines and deliverables, to fellow team members during research collaborations and keeping in touch to ensure deadlines are met, result: successful authorship of collaborative papers.'
Drive and motivation	Commitment to continued professional development Demonstrate self-discipline, motivation and thoroughness Show initiative, work independently and be self-reliant	'Being proactive and organised when researching at the British Library in order to get information quickly due to limited time booked at the Library.' 'Demonstrating a track record of excellence to gain research place and funding, similar to delivering outstanding performance in a commercial environment.' 'Discarding data, advising supervisor that it's gone wrong and then picking yourself up and starting again, being motivated to deliver and progress the project to a successful conclusion.' 'Doing PhD whilst working full-time, doing a full day's work and then studying before and after work and at weekends, requiring discipline and dedication.'
Problem solving	The ability to recognise and validate problems Original independent and critical thinking and the ability to develop theoretical concepts Having a flexible and visionary approach to problem-solving	'Dealing with data and experiments going wrong, being able to take a 'bigger picture' view as well as a 'hands on' view to work out the issue, solve it and progress/deliver a project.' 'Researching and assimilating information quickly to continue research and deliver best outcome.' 'Having to evaluate and assess relevant data and information, define the root cause of a problem, and determine the best available option.'
Data analysis	The ability to critically analyse and evaluate one's findings and those of others An ability to summarise, document, report and reflect on progress Design and execute systems for the acquisition and collation of information through the effective use of appropriate resources and equipment	'Considering both qualitative and quantitative factors and taking large amounts of data and turning it into meaningful information.' 'Analysis of large complex data sets consuming many gigabytes of storage, writing up findings to support research.' 'Analysing 4,000 water molecules and DNA, having 10,000 samples in progress in the laboratory at any one time and collating and reporting the findings.'

Vitae employer network

Vitae works with current and prospective employers of researchers to:

- provide information about researcher careers and employment
- facilitate dialogue between researchers and employers
- provide information on the latest thinking in recruiting, training and working with researchers
- campaign to raise the range of employment opportunities open to researchers
- provide an opportunity for employers to engage in national discussions around how we train our researchers.

We aim to raise awareness of the value and contribution of researchers to the UK economy and society.

Vitae works to support your engagement with the researcher labour market. There are a variety of ways you can get involved, for example:

- Talking to us about your experience of recruiting doctoral graduates and researchers
- Sharing best practice in the career development of doctoral graduates and researchers
- Giving us your opinion about how the higher education system can enhance the development of skills and improve the employability of researchers

Visit www.vitae.ac.uk/employers for further information on the Vitae employer network.

Compiled by Emma Ford, Dr Nicola Barrett and Dr Tristram Hooley for Vitae (2009). Researcher quotes were gathered in response to an open question on the Vitae website about the development of skills during doctoral study. The typical skills developed by doctoral graduates are based on the Joint Skills Statement of Skills Training Requirements (2001).

Other useful resources for employers

Employers briefing: Targeting the postgraduate and researcher market highlights the skills and experience of postgraduates and people with a background in academic research.

Recruiting researchers: Survey of employer practice 2009 represents Vitae's most systematic attempt to develop an understanding of the attitudes and practices of non-higher education employers in relation to doctoral graduates.

What do researchers do? First destinations of doctoral graduates by subject demonstrates that doctoral graduates continue to be highly employable across the economy in a wide range of occupations.

What do researchers do? Career profiles of doctoral entrepreneurs (2010) is a collection of 30 career stories from doctoral researchers who have gone on to become entrepreneurs. www.vitae.ac.uk/wdrd.

What do researchers do? Career stories on film is a collection of 20 films of researchers talking about their careers illustrating the range and variety of careers that people with a research training go on to. Available on www.vitae.ac.uk/docs

All of these resources are available from www.vitae.ac.uk/publications

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