

Initial survey of the literature relating to the skills, competences and attributes of researchers

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Summary

There is limited literature on attributes and competencies in higher education. However competencies have been written about and used in human resource management since the 1980s when Boyatzis published his seminal book 'The Competent Manager: a Model for Effective Performance' (1982). The title of this book explains why academics are wary of the use of this language; it is reductive, behavioural and prescriptive and thus not necessarily applicable to a creative enterprise. Academics are more comfortable with the notions of values and attributes. However research is carried out within all types of organisations and this review aims to highlight the best of these varying worlds to help explore and explain the attributes required of research staff.

This paper also reviews some of the literature describing what research is to provide insights into what researchers do. Particularly important in examining this area from an internal perspective is the phenomenographic paper by Brew (2001) on how academic researchers perceived their role. This internal perspective also needs to be balanced by taking into account the Research Council's values of collaboration, economic impact, providing a high quality, sustainable research base and diversity, alongside their interdisciplinary topic priorities of sustainable energy, environmental change, global security, life-long health and wellbeing, nanoscience to nanoengineering and digital economy (Research Councils UK, Balanced Scorecard 2008 and Research Priorities).

Introduction

This introductory paper reveals how little has been done in identifying the goals, skills and attributes required of outstanding research staff. As Boyatzis points out (2007) academic and applied research (into competencies) has lagged their application (p5), however there is plenty to begin to study in tangential fields.

There are various questions that this survey begins to address. What do we know about:

- how we define research and what do research staff do?
- what the career paths are for research staff and what changes can we foresee that might impact on that career path?
- what skills, competencies and attributes might research staff need?

We need to identify how 'research' is conceived and the diverse roles that research staff may go on to inhabit. Studies of critical thinking in the disciplines (Donald 2002) have given us an insight into the varying methods of establishing proof and the Carnegie Initiative on the Doctorate (Golde & Walker 2006) describes the different approaches to protecting and developing six different disciplines. Academics, notably at the University of Sydney, have studied 'graduate attributes', and once these were agreed they influenced the whole direction and management of the University (Barrie 2004 & 2006). The human resource movement has embraced competencies (Boyatzakis 1982) and they have become a powerful management tool which has both shaped the planning of organisations and been used to define acceptable performance levels.

An area which will not be fully explored in this review is the socio-psychological impact of identity change. Various authors have explored this in the academic world (eg Perry 1970 and Baxter Magolda 1992) but the current literature on multiple identities is implied in the breadth of attributes and competencies that are discussed.

A presentation to the Rugby Team in January 2009 by Professor Pam Denicolo and Rob Daley suggested that any framework of researcher attributes might need to accommodate disciplinary differences as well as recognise the need to enable mobility for those pursuing a career as a researcher, as an academic and outside academic life.

Although that meeting recommended that the language of 'attributes' be used rather than the language of 'competency', this review has included both because there has been a significant amount of work on competences which can usefully be accessed for this debate.

Attributes have been defined as 'skills, knowledge and abilities' (Barrie 2006 p217) and as 'qualities that prepare graduates as agents of social good' (Bowden et al in Barrie 2006 p217).

This literature review can only mark an early stage in this debate. Barrie (2006) and Weighman (1994) both point out that isolated initiatives and lists of attributes on their own have little effect. They need to be owned and supported by all the stakeholders if they are to have impact.

The remainder of the review identifies the scope of the review and explores what is research, what do research staff do, what changes can we foresee in the future and what attributes might be required of research staff.

Scope and limitations of this literature review

The literature review has searched education and management databases (ERIC, Australian Education Index, British Education Index and Emerald) for attributes, research and competencies. Only one paper could be found that addressed the issue of developing research capacity in higher education (Rowley and McCulloch 1999). Competencies have been extensively (but not always rigorously) studied in human resource development and management literature. Thus this review has not been confined to refereed papers or particular research methodologies because it became apparent that this would exclude concepts which might warrant further examination. However it does mean that the list of attributes and competencies included here are not all verified. Barrie (2006) argues that there is little research which goes beyond the documentation of lists of particular outcomes, and says that there needs to be research that asks about the understandings and intentions of the academic (or any curriculum designer).

McAlpine (2007) introduces two additional key lenses to this debate which are not explored in this paper. Firstly the lens of values – this paper does not address the issues of values and moral purpose and whether they are congruent or not between the

organisation, society and the individual. The second key lens that she proposes is that of identity in the community, and although we explore here some of the nature of team working, there is another deeper agenda in the sphere of communities of practice (Lave and Wenger 1991) which is worth further study.

What is research and what is research for?

In the UK the Research Assessment Exercise (RAE) defined research as ‘original investigation undertaken in order to gain knowledge and understanding’ (RAE2008. 2005 p34). Espousing this definition would lead us to have a limited view of the role of research staff. The skills required would be those of disciplinary or interdisciplinary-based critical thinking (Donald 2002, Lee 2009 in press). The next section explores some of the work around higher level critical thinking and then looks at wider definitions of what research is.

The term ‘critical thinking’ is used here to describe the intellectual, philosophical and analytical approaches to problem solving that the researcher needs to use. It is about developing an ability to understand, critique and create the argument. This depersonalisation of critical thinking enables us to examine the substantive thinking processes free from emotion. In reality, of course, we cannot depersonalise the researcher. Relationships and communication are hugely important; however it is important to establish what the goals might be before feelings have to be taken into account.

In practice critical thinking addresses such questions as what is the underlying conceptual framework, what are the arguments for and against, what has been considered and what has been left out. Doctoral researchers could be expected to have mastered many of these skills, but they also provide an ongoing quest for development when applied to new and more complex problems.

Table 1 below summarises different stages in critical thinking and gives some examples of questions that a researcher might ask at each stage. Donald (2002) gives many further examples for each of the disciplines she has studied (physics, engineering, chemistry, biological sciences, psychology, law, education and English literature), but this list below aims to be both comprehensive and generic.

Thinking Processes and Behaviours		Typical questions the researcher might be asked
Description		Describe what you think we are looking at here?
	Identify context	What are the surroundings in which this is happening?
	State conditions	What elements of this context are essential prerequisites to this happening?
	State facts	What generally accepted information applies here?
	State functions	What normally happens here?
	State assumptions	What assumptions or propositions have been accepted? What do you mean by? What is your reason for proffering that opinion? But in another situation the converse is true?
	State goal	What is your aim? What are your objectives?

Selection		What were the other options you looked at, why was this chosen in preference to them?
	Choose relevant information	What information is particularly relevant to this question?
	Order information in importance	How do you prioritise it?
	Identify critical elements	What are the important units or parts of that information?
	Identify critical relations	Which connections are most important?
Representation		What symbols are relevant here?
	Recognise organising principles	What laws or rules cover this part of the picture?
	Organise elements and relations	What does a concept map of this area look like?
	Illustrate elements and relations	What are the words or symbols that describe the links between the concepts?
	Modify elements and relations	What connections or concepts can be altered, and how?
Inference		If x is true, what are the implications? What conclusions can you draw from your findings?
	Discover new relations between elements	Describe connections between concepts or elements that have not been seen before?
	Discover new relations between relations	Describe connections between these connections?
	Discover equivalence	Is that like anything else?
	Categorise	What classification does that fall into?
	Order	Where in the sequence does it fall?
	Change perspective	What if you were to look at it from another perspective?
	Hypothesise	Does this analysis help you to form a proposition?
Synthesis		
	Combine parts to form a whole	Can you see a whole pattern emerging?
	Elaborate	Describe that pattern in more detail?
	Generate missing links	Where are the gaps, what does it not explain?
	Develop a course of action	How can we prove, expand, and/or illuminate this phenomena?

Verification		How can we test the validity of this finding? What examples can you give, what evidence can you show?
	Compare alternative outcomes	Is there any consistency across different contexts, over different times?
	Compare outcome to standard	How does this result compare to what might be expected?
	Judge validity	What is the soundness of these results? In how many ways could we prove it wrong? Would we get the same result if we used different experimental methods?
	Use feedback	What feedback are we getting? How do we need to adjust to it?
	Confirm results	What test-retest or triangulation strategies do we need to employ? Are the findings repeatable?

Table 1: Coding questions to develop critical thinking skills

(Lee 2009, Adapted from Donald 2002 pp26-27)

These skills of description, selection, representation, inference, synthesis and verification will have been developed to a considerable extent during the PhD process, but this is a comprehensive table covering many disciplines, and it may be that the doctoral researcher has not had the opportunity to master an interdisciplinary approach to research.

Another very interesting study of critical thinking, problem solving and communication skills found some significant differences between the disciplines of history, physics, economics, law and medicine. Several academics from each discipline were interviewed and the resulting analysis found that the language used, and sometimes the content studied, was different. For example in looking at what different disciplines were interested in and meant by 'problem solving': historians were interested in causality; physicists defined problems as 'well-' and 'ill- structured', were concerned about rigour and used mathematics for solving them. Economists used economic tools and applied theory to practical or policy issues; law were concerned with critical thinking and practical applications; and medicine required contextual thinking, deductive, diagnostic and therapeutic skills (Jones 2009). This does reflect the different nature of problems in different disciplines, but more fundamental is the view of knowledge taken by the researcher – do they see knowledge as fixed and stable or as emergent and constructed?

Brew (2001) carried out a seminal phenomenographic study of how academic researchers saw their role, and identified four main conceptions (Table 2):

- researchers, who saw their work as solving problems in a linear function, conceived of research as a process of problematising or solving problems (Domino)
- researchers who saw their work as a market place for exchanging ideas were interested in publications, grants and social networks (Trading)
- researchers who saw their work as discovering hidden meanings would be applying critical thinking skills to analysing data (Layer)

- for researchers who saw their work as part of a personal journey, their career aims would be closely linked to the direction their research was moving in, rather than the other way around. (Journey)

	Domino	Trading	Layer	Journey
In the foreground is:	Solving problems in a linear fashion	Publications, grants social networks	Data is linked together with hidden meanings	Personal existential issues, linked to career
Research is	Process of problem-atising or solving problems	A market place for exchanging ideas	Discovering hidden meanings	A personal transformative journey
Generic skills required	Problem solving, project management	Communication skills (written, aural, IT), networking,	Analysis and synthesis	Self awareness
Proactive awareness of ethical issues				

Table 2 Interpreting conceptions of research

Adapted from Brew 2001

What do research staff do?

Rowley and McCulloch provide us with a four stage model for the development of researchers which looks at how researchers might become members of a community of practice.

Stage	1	2	3	4
Role	Apprentice	Member	Expert	Leader
Networking activity	Entering the Fray	Establishing national networks	Being part of natural networks	Building and strengthening networks and international reputation
Scope of research activity	Single project eg PhD	Two or three core projects with participation in one or two others	Leading large funded research projects	Participation in multi-national research collaborations
Dissemination	First articles First conference presentation	Regular contributor to a focussed set of conferences and journals. Occasional reviewing and refereeing	Possibly higher quality publications. Editorial Board memberships Regular refereeing	Editor of journal, monograph series etc. Invited contributor, Keynote speaker. Contributions in both business and professional arenas

Involvement with academic community	Becoming acquainted	Collaborative work Supervision of PhD researchers	Valued as an experienced researcher. Attendance at overseas/international conferences. Growing network of contacts. PhD external examination	Guru, with whom others wish to be associated. Expenses paid invitations to international conferences. Regular contact with researchers in several countries.
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Table 3: Stages of researcher development Rowley and McCulloch (1999 p 108)

There are several implications from this table: there is an implication for the researcher in developing skills which might be called generic: as a communicator; in networking; in intercultural competence; teamworking; management and supervision; fundraising and knowledge transfer.

This staged model is further examined in the Bristol Job Evaluation scheme, the Glasgow Caledonian University Project Update and the University of Surrey's booklet on Job Families (see table 5 below and appendices).

We look in more detail at the various activities that research staff undertake.

Research staff as creators and custodians of knowledge

The most easily recognised function of research staff is their role as creators and custodians of knowledge. They are in the front line of protecting the processes used to discover or create valid new knowledge. As we have already seen, knowledge is verified in different ways and validity is identified differently in different disciplines. When faced with an interdisciplinary world, researchers need to have some conception of what knowledge is (Baxter Magolda 1992, Bayer-Manfred, Lababidi-Tarek. 2003), and this also leads them to need to articulate their values around the ethics required for research and technical skills for information management (Gormam and and Corbitt 2002, and Brew 2001)

Research staff as team members

Team membership is vital to most good research. It supports ethical working (Lee 2008b) and the development of future researchers (Leonard 2007 and McAlpine, Jarvac-Martek, & Hopwood 2007). The greater debate is around how one develops good team-working and good team members (see section 5).

Research staff: should they be prepared to teach?

There is a debate about how much we should prepare research staff for teaching. If their career is to be entirely in research do they need to consider teaching at all? In some research institutes research staff will never come across undergraduate students,

but most research staff will work in academic institutions where they will come across students and that the creation of original knowledge brings with it an obligation to explain, inspire and educate.

Jenkins, Healey and Zetter (2007) have studied the links between creating and discovering original knowledge and teaching. This is often called the research/teaching nexus and is a controversial issue. Some academics (largely those who see their research as 'atomistic and teaching as a transmission-based activity' Jenkins et al p 18) believe that there is no automatic connection. Studies suggest a variety of perceptions of the impact on undergraduate students. Whilst some students benefit from being in a research-led university because they perceive their courses to be up to date and their lecturers passionate about their subject, other students feel they suffer because academics have less time to help them with their studies (op cit).

Research staff as co-supervisors

Research staff frequently have an important role in supervising doctoral researchers (Lee 2008b) particularly in the science disciplines because of the close nature of much laboratory work. As research teams grow research staff become the most regular link between the doctoral researcher and the next level of expertise. Supervision requires a range of skills, including developing critical thinking, understanding the pedagogy of supervision and providing a good role model to mentoring. Ackerlind (2009), in a study of 1011 Australian research staff, found that 50% of them were involved in co-supervision.

Research staff as project managers

The researcher will need sophisticated project management skills; these can require complicated software and analysis systems. The management of cash flow, people and other resources can demand outstanding organisational skills. The management of people also requires an understanding of diversity issues (Jokinen T 2005, Spendlove 2007, Gorman and Corbitt 2002). Apart from the legal and ethical requirements around equality there may be some specific issues around working with those with special learning needs which occur more frequently in some areas of research. For example, there has been speculation that Alan Turing, the scientist, philosopher and mathematician, had aspergers syndrome (O'Connell and Fitzgerald 2003) and Richard Borchers, the mathematician who was awarded a Fields Medal, diagnosed himself as having Asperger's Syndrome (Sing 1998).

Research staff as fund-raisers

In the UK the government funding agencies and large grant making charitable trusts (e.g. Nuffield, Wellcome Foundation) tend to work closely together (HEFCE 2007), so research staff can use similar skills to analyse needs and present cases to these bodies. However, working with commercial funders requires an understanding of organisational strategies and an ability to maintain high level networks in a different arena. Working with some smaller charitable trusts may require the research leader to be involved with end-users of the research if funding is to continue (an example of this is the funding

provided by the Muscular Dystrophy Campaign to Professor Martin Bobrow's research, where he has been involved as a trustee of the campaign for many years).

Research staff as communicators

With the discovery or creation of original knowledge comes the responsibility to communicate this knowledge. Research funding is highly influenced by the quality of previous communications, as the RAE exercise regularly demonstrates. This communication includes conference presentations and written work – and both require some generic skills in marketing as well as the basic subject knowledge.

Research staff as academic practitioners

In summary, we expect research staff to belong to a network of academic practitioners, both contributing to an academic and the wider community. There are many tacit requirements of this membership. McAlpine (2007) suggests that there are three key elements of academic practice:

- forms of inquiry, from scholarly examination of documents to empirical research – whether applied or pure, commissioned, individual or collaborative
- forms of teaching, working with undergraduates, postgraduates and postdoctoral fellows in the broadest sense - including, for instance, planning, assessment, supervision, advising and mentoring
- forms of service to the institution, the discipline, profession and larger community, e.g., chair/member of an institutional committee, organiser of a disciplinary conference, consultant for a charity.

What changes can we foresee?

Interdisciplinarity

Golde & Walker (2006) describe how researchers entering doctoral studies in neuroscience can have come from backgrounds in biology, psychology, chemistry or pharmacology (p207) and even sociologists are bringing insights to bear on the problems that neuroscientists are involved in. Environmental science is another example of a 'hybrid discipline'; it requires engineering, chemistry, management and psychological understanding. Some music technology courses now demand a high level of competence in physics and computer science, and these are considered as important as any musical background.

A continuing division between arts, humanities and social sciences, science, maths and statistics will be perpetuated if the REF exercise continues to pursue the line proposed:

'We envisage that research staff will be identified either as:

- *falling within the science-based groups, and hence subject to bibliometric analysis; or*
- *falling within the other disciplines and hence to be submitted for assessment through light-touch peer review.'* (HEFCE 2007 p 7)

A consequence is that scientifically based research staff may be well advised to become familiar with bibliometric measurements, and others will need to become familiar with the more traditional qualitative measures. In time HEFCE recommends moving as much to bibliometrics as possible. (HEFCE 2007 section 53 p14)

A quick review of the subject groupings used for the RAE 2008 and proposed for the REF (HEFCE 2008 p 19 and 20) (Table 4) shows that interdisciplinarity is not a key theme at this funding level. On the other hand, we know that interdisciplinary working is happening in practice: for example 'public health' can require many disciplines (e.g.: economists, clinicians, sociologists, sports scientists). Similarly 'climate change' can require engineers, geophysicists, meteorologists, and psychologists.

Subject group	RAE 2008 units of assessment
Clinical Medicine	Cardiovascular medicine Cancer studies Infection and Immunology Other hospital based clinical subjects Other laboratory based clinical subjects
Health sciences	Epidemiology and public health Health services research Primary care and other community based clinical subjects Psychiatry, neuroscience and clinical psychology
Subjects allied to health	Dentistry Nursing and midwifery Allied health professions and studies Pharmacy
Biological sciences	Biological sciences Pre-clinical and human biological sciences Agriculture, veterinary and food sciences
Physical sciences	Earth systems and environmental sciences Chemistry Physics
Engineering and computer science	Computer science and informatics Electrical and electronic engineering General engineering and mineral and mining Engineering Chemical engineering Civil engineering Mechanical, aeronautical and manufacturing engineering Metallurgy and materials

Table 4: Groups of STEM disciplines for RAE 2008 and proposed for REF.

Abstract from HEFCE Proposed groupings for the science-based disciplines HEFCE 2007 p19

Increasing globalisation

Research has long been an international business; there is no guarantee that research will always be dominated by the English language. The requirement for researchers to become internationally recognised demands a cultural competence. (Bristol accessed 14.2.09, Surrey 2005)

What attributes might be required of research staff?

It is quite logical to see some research staff as our future leaders. This means that they will need to develop a strategic vision, they need to anticipate at least some of the effects of their research and learn how to influence governments, businesses and the voluntary sector. For example, the leading engineer needs to confront the ethical question of how their work might be used, and if their research created environmental damage, they might feel obliged to move into the interdisciplinary area of life cycle analysis and environmental research. They also need to be looking to their future and asking how they can build capacity to continue the important research that they have begun.

In some cases the aspirational list below favours the multi-lingual, high-flying generalist more than the bench researcher who just wants to work in a laboratory or at a computer. Whilst we need brilliant minds that can do brilliant research, we also need brilliant people to apply and develop that work (which is where the hitherto frequently undervalued professional doctorates might also be useful).

The Concordat for the Career Development of Researchers (Concordat 2008) consists of a set of key principles for the future support and career development of researchers:

- recognition of the importance of recruiting, selecting and retaining researchers with the highest potential to achieve excellence in research
- researchers are recognised and valued by their employing organisation as an essential part of their organisation's human resources and a key component of their overall strategy to develop and deliver world-class research
- researchers are equipped and supported to be adaptable and flexible in an increasingly diverse, mobile, global research environment
- the importance of researchers' personal and career development, and lifelong learning, is clearly recognised and promoted at all stages of their career
- individual researchers share the responsibility for and need to pro-actively engage in their own personal and career development, and lifelong learning
- diversity and equality must be promoted in all aspects of the recruitment and career management of researchers
- the sector and all stakeholders will undertake regular and collective review of their progress in strengthening the attractiveness and sustainability of research careers in the UK.

Boyatzis R E (2008) in his introduction to competencies identifies three clusters of competencies:

1. Cognitive competencies such as systems thinking and pattern recognition. An ability to think or analyse information and situations that leads to or causes effective or superior performance
2. Emotional intelligence competencies, including self awareness and self management competencies, such as emotional self-awareness and emotional self control. An ability to recognise, understand and use emotional information about oneself that leads to or causes effective or superior performance.
3. Social intelligence competencies, including social awareness and relationship management competencies such as empathy and teamwork. An ability to recognize, understand and use emotional information about others that leads to or causes effective or superior performance

Appendix 1 summarises the papers that have been reviewed for this report that introduce, propose, illustrate, problematise or research attributes and competencies that may be useful in identifying those of researchers.

Conclusion

The competent research staff is on a path that requires a clear ethical framework and increasing competence in a range of areas. Stakeholders in the community need to work together to agree the attributes to be aspired to.

Weighman (1994) explores a range of ways of identifying competencies, and argues that a multi-method approach is the most comprehensive. She describes an approach at identifying competencies for an NHS training programme which used:

1. self assessment
2. systematic structured observation
3. repertory grid
4. interviews
5. consultation

The list of competencies which emerged was (as we might expect) comprehensive and sometimes repetitive, but it is reproduced in its entirety in Appendix 2 for reference.

The stakeholder group can decide which combination of approaches to identifying the attributes of successful research staff would be most useful for them. The Higher Education Academy's Guide to student employability profiles (2007) provides a skills map for over 50 different subjects. Whilst it is for undergraduate students, it will provide a useful base document to help the stakeholder group benchmark their work at the right level and to consider disciplinary differences.

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Appendix 1 Summary of papers referring to attributes and competences

Topic	Attributes/competencies discussed	Reference and research base (where applicable)
Developing research capacity	<ol style="list-style-type: none"> 1. Networking within the community 2. Identifying and pursuing significant research (understanding the significance of research outcomes, rigorous research design, data collection and analysis, appropriate conceptual frameworks and perspectives, effective use of resources and researcher expertise) 3. Identifying most prestigious and varied international avenues for dissemination 4. Strategic planning requiring a high level of individual commitment and focus 5. Projecting outcomes (planning and monitoring) 6. Participative planning and monitoring to promote team ownership 7. Framing resilient objectives 8. Establishing a sustainable revenue stream through relationships with research councils etc 9. Creating effective systems and information infrastructure 10. Managing staff with research and teaching commitments 11. Contributing/creating integrated research structure 12. Managing interface between research and other institutional activities 	<p>Rowley J and McCulloch A (1999) Developing Research Capacity: Moving On. Scottish Journal of Adult and Continuing Education Vol 5 No 2</p> <p>General proposal from business, management and social sciences</p>
The Science Council requirements for chartered scientists.	<p>The Science Council emphasises the requirement for an ethical approach to science in their Code of Conduct, they require their scientists always to have regard for the public interest and to engage in continuing professional development.. They require their chartered scientists to be able to:</p> <p>“Deal with complex scientific issues, both systematically and creatively, make sound judgements in the absence of complete data and communicate their conclusions clearly to specialist and non specialist audiences. Use a combination of general and experiential knowledge, understanding and skills to be able to optimise and engage in the application of existing and emerging science and technology</p> <p>Typically this will include the ability and commitment to:</p> <ul style="list-style-type: none"> • Deal with complex scientific issues, both systematically and creatively, make sound judgements in the absence of complete data and communicate their conclusions clearly to specialist and non specialist audiences 	(Science Council 2001/02)

	<ul style="list-style-type: none"> • Use a combination of general and experiential knowledge, understanding and skills to be able to optimise and engage in the application of existing and emerging science and technology • Typically this will include the ability and commitment to: identify potential projects and opportunities through a knowledge of the field of practice and current market needs; • conduct appropriate research to enable the design and development of scientific projects/processes; • know and manage personal strengths and weaknesses; identify the limits of own personal knowledge and skills; be confident and flexible in dealing with new and changing situations. <p>Use theoretical and practical methods in the analysis and solution of problems Typically this will include the ability and commitment to:</p> <ul style="list-style-type: none"> • carry out experimental work and/or advise on and manage the work of others; • collect, analyse and evaluate relevant data and offer solutions. <p>Communicate effectively Typically this will include the ability and commitment to:</p> <ul style="list-style-type: none"> • present solutions to technical and non scientific audiences; • communicate with colleagues at all levels; • exchange information and give advice to scientific and non-scientific audiences; • prepare and deliver appropriate presentations; • prepare letters, reports and proposals. <p>Exercise self-direction and originality in solving problems, and exercise substantial personal autonomy in planning and implementing tasks at a professional level. Plan and organise projects effectively Typically this will include the ability and commitment to:</p> <ul style="list-style-type: none"> • identify potential projects and opportunities through a knowledge of the field of practice and current market needs; • identify factors affecting project implementation; • ensure necessary resources are in place for effective project • implementation; 	
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	<ul style="list-style-type: none"> gather and evaluate feedback, acting where appropriate. <p>Work effectively in a team Typically this will include the ability and commitment to:</p> <ul style="list-style-type: none"> organise and lead work teams, coordinating project activities; identify, agree and work towards collective goals; create, maintain and enhance productive working relationships; be aware of the needs and concerns of others. <p>Use effective influencing and negotiating skills Typically this will include the ability and commitment to:</p> <ul style="list-style-type: none"> conduct appropriate research to influence the design and development of scientific projects and processes; have sound knowledge of project costs and the ability to negotiate appropriate project funding. <p>Continue to advance their knowledge, understanding and competence to a high level. Demonstrate a commitment to CPD Typically this will include a commitment to:</p> <ul style="list-style-type: none"> extend own knowledge, understanding and scientific capability; broaden own knowledge base; undertake reviews on own development needs; maintain evidence of professional competence development. <p>Demonstrate an understanding and commitment to Health and Safety and environmental issues related to employment Typically this will include the ability and commitment to:</p> <ul style="list-style-type: none"> operate and act responsibly, taking account of environmental and socio-economic factors. <p>Comply with the relevant codes of conduct Typically this will include the ability and commitment to:</p> <ul style="list-style-type: none"> comply with the rules of professional conduct of own professional body; 	
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	<ul style="list-style-type: none"> work constructively within all relevant legislation and regulatory frameworks including social and employment legislation; apply professional work ethics. 	
<p>Statement of the skills and attributes that doctoral researchers are expected to have on completion</p>	<p>(A) Research Skills and Techniques - to be able to demonstrate:</p> <ol style="list-style-type: none"> the ability to recognise and validate problems original, independent and critical thinking, and the ability to develop theoretical concepts a knowledge of recent advances within one's field and in related areas an understanding of relevant research methodologies and techniques and their appropriate application within one's research field the ability to critically analyse and evaluate one's findings and those of others an ability to summarise, document, report and reflect on progress <p>(B) Research Environment - to be able to:</p> <ol style="list-style-type: none"> show a broad understanding of the context, at the national and international level, in which research takes place 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 demonstrate appreciation of standards of good research practice in their institution and/or discipline understand relevant health and safety issues and demonstrate responsible working practices understand the processes for funding and evaluation of research justify the principles and experimental techniques used in one's own research understand the process of academic or commercial exploitation of research results <p>(C) Research Management - to be able to:</p> <ol style="list-style-type: none"> apply effective project management through the setting of research goals, intermediate milestones and prioritisation of activities design and execute systems for the acquisition and collation of information through the effective use of appropriate resources and equipment identify and access appropriate bibliographical resources, archives, and other sources of relevant information use information technology appropriately for database management, recording and presenting information <p>(D) Personal Effectiveness - to be able to:</p>	<p>Joint Statement of the UK Research Councils' Training Requirements for Research Students (2001)</p>

	<ol style="list-style-type: none"> 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 own training needs 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 <p>E) Communication Skills - to be able to:</p> <ol style="list-style-type: none"> 1. write clearly and in a style appropriate to purpose, e.g. progress reports, published documents, thesis 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 <p>(F) Networking and Teamworking - to be able to:</p> <ol style="list-style-type: none"> 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 behaviours and impact on others when working in and contributing to the success of formal and informal teams 3. listen, give and receive feedback and respond perceptively to others <p>(G) Career Management - to be able to:</p> <ol style="list-style-type: none"> 1. appreciate the need for and show commitment to continued professional development 2. take ownership for and manage one's career progression, set realistic and achievable career goals, and identify and develop ways to improve employability 3. demonstrate an insight into the transferable nature of research skills to other work environments and the range of career opportunities within and outside academia 4. present one's skills, personal attributes and experiences through effective CVs, applications and interviews. 	
<p>Developed by the Irish Universities Association this</p>	<p>Research skills & awareness</p> <ul style="list-style-type: none"> • exhibit knowledge of advances and developments in their field. • demonstrate knowledge of research in related fields and disciplines. 	<p>Irish Universities' graduate student skills statement, Irish Universities Association (2007)</p>

<p>describes the desired learning outcomes and skills that PhD graduates should aspire to achieve and possess</p>	<ul style="list-style-type: none"> • comprehend and effectively employ appropriate research methodologies. • critically analyse and synthesise new and complex information from diverse sources. • formulate and apply solutions to research problems and effectively interpret research results. • exercise critical judgement and thinking to create new ways of understanding. • demonstrate, where appropriate, a knowledge of health and safety procedures and their application in the research environment. • have a broad awareness and knowledge of key relevant funding sources and grant application processes • appreciate basic principles of project and time management <p>Ethics and social understanding</p> <ul style="list-style-type: none"> • understand, apply in their research, principles of ethical conduct of research, including avoidance of plagiarism, allocation of credit and authorship and definitions of research misconduct • understand the relevance of research in society and the potential impact of research on individuals, groups and society. • where applicable, understand and apply the relevant guidelines for the ethical conduct of research involving people, human tissue and animals <p>Communication skills</p> <ul style="list-style-type: none"> • demonstrate effective writing and publishing skills. • effectively use and decide on appropriate forms and levels of communication. • communicate and explain research to diverse audiences, including both specialists and non-specialist • teach and support the learning of undergraduate students when involved in teaching and demonstrating <p>Personal effectiveness/development</p> <ul style="list-style-type: none"> • operate in an independent and self-directed manner, showing initiative to accomplish clearly defined goals • appreciate key rhetorical skills, including how to persuade others of a viewpoint's merits, demonstrating and communicating credible suggestions to achieve one's aims. • appreciate the importance of initiating new projects, proactively reacting to newly identified needs or aiming to resolve persistent problems • ability to handle difficulties in research or other professional activities in an appropriate way • critically reflect in experiences and act on such in a cycle of self-improvement 	
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	<p>Team-working and leadership</p> <ul style="list-style-type: none"> • develop and maintain effective relationships with colleagues. • work in a collaborative environment. • Awareness of their own working style, that of others, and how they interact. • Understand how to acknowledge others' views, with a willingness to reflect on them and critically appraise them. • Understand leadership in team environments, recognising the strengths of team members and work effectively to achieve mutual goals <p>Career management</p> <ul style="list-style-type: none"> • Demonstrate an awareness of transferable skills and their applicability to both academic and non-academic positions and how they are applied in different circumstances • take ownership of their own career management, forming credible career plans. • initiate and sustain networks and relationships that may encourage opportunities for employment • present themselves and their skills, attributes, experiences and qualifications, through effectively job applications, CVs and interviews • understand the broadest possible range of their employment opportunities <p>Entrepreneurship & innovation</p> <ul style="list-style-type: none"> • understand the role of innovation and creativity in research • demonstrate an awareness and understanding of intellectual property issues, appreciate and, where appropriate, contribute to knowledge exchange • appreciate the skills required for the development of entrepreneurial enterprises in the public and private sectors.. • understand different cultural environments, including the business world, and the contribution that knowledge transfer can make to society 	
<p>Qualifications skills and experience needed for appointments as a researcher at varying levels at the University of</p>	<p>Level A Good honours degree, may work towards higher degree Analytical skills and ability to communicate complex information orally and in writing Ability to work collaboratively with colleagues Ability to use personal initiative and creativity to solve problems encountered in research context</p> <p>Level B Experience of research</p>	<p>University of Bristol Job Evaluation Scheme http://www.bris.ac.uk/personnel/acad-pathways/index.html (accessed 14.2.09)</p>

Bristol	<p>Postgraduate degree Detailed subject knowledge in research area and likelihood of advanced skills in research area Presentations to conferences and some publications Ethical awareness Ability to bring individual insights to research project</p> <p>Level C In depth knowledge of area, well developed technical/methodological skills and experience in designing and delivering research projects Ability to assess and evaluate concepts/theories in order to develop original solutions Ability to provide leadership to small research teams Strong publication record Ability to contribute to broader organisational and management processes, to provide mentoring and leadership co-ordinating the work of other staff</p> <p>Level D International reputation for quality of research work Extensive experience of initiating, designing and implementing research projects Evidence of support for less experienced researchers Collaboration with scholars outside the Department (either nationally or interdisciplinary)</p> <p>Level E Recognised international reputation for the quality and significance of their research work, recognised by peers nationally and internationally They will enjoy substantial signs of external peer recognition of their research eminence Provide academic leadership and advice to experienced researchers Advance the understanding of their discipline Involvement in and activating research links nationally and internationally Contribute to strategic decision-making within and running of department/faculty/university Active in national professional organisations, including research councils and other funding bodies or government organisations.</p>	
Draft Skills map for researchers	<p>Level 1 Formulates significant and achievable research questions Sees long term direction of research focus</p>	<p>Compilation of a skills map for researchers. Project update for Glasgow Caledonian University 5.1.2009</p>

	<p>Observes development in field Knows research focus, direction of research unit and the University</p> <p>Level 2 Creates own research niche and area of specific interest Tracks and anticipates the priorities of funding bodies Scans political and financial climate relevant to research area Uses knowledge of stakeholders to inform research strategy Spots potential opportunities for collaboration with other researchers Knows the research focus and direction of their discipline/areas of interest</p> <p>Level 3 Connects researchers to provide a robust, long-term research vein Creates the research niche or topics Shapes the thoughts and research of others Develops a valuable research thrust with intellectual depth and breadth Creates the focus and direction of their fields of interest</p>	
<p>Description of Research and Teaching 'Job Family' for Job Evaluation purposes</p>	<p>Level 4: normally requires PhD. Requires management and administration skills, high level analytical capability, ability to communicate complex information clearly and to encourage commitment to learn in others, ability assess and organise resources, ability to contribute to broader management and administrative processes, creative in approaches to relevant models, techniques and methods, and able to develop new ones under some supervision.</p> <p>Level 5: Requires ability to pursue research personally and/or as part of a team, and present findings, develop research proposals and funding bids, and win support for them, plan the research to be undertaken as a self-contained item, as part of a broader programme or as part of a multi-disciplinary approach, develop methodologies and techniques appropriate to the type of research being pursued, provide expert advice to other staff and students. Requires evidence of a growing reputation in research, track record of published research, ability to manage resources and understanding of management processes and skills in management and motivation of staff (if appropriate).</p> <p>Level 6: As above and lead funding bids that develop and sustain research support for the specialist area, participate actively in the development of the Department/unit's research strategy,</p>	<p>University of Surrey (2005) Job Families Booklet</p> <p>Available from http://portal.surrey.ac.uk/human resources</p> <p>Extract for Levels 3-7 for Research and Research family</p>

	<p>develop and maintain research activity of high UK and international reputation, develop and manage staff and resources in support of major research or teaching activities, represent the University/faculty/School in the disciplinary community externally, contribute significantly to the running of the School and the wider academic community eg editing journals, refereeing papers, external examining and involvement in professional bodies.</p> <p>Level 7: Extensive years of experience in the above, may be Head of School, proven ability to lead and motivate experts, widely recognised excellence and reputation in the specialist subject area amongst peers nationally and internationally. Proven ability to develop sources of income.</p>	
Introduction to competencies	<p>Identifies three clusters of competencies:</p> <ol style="list-style-type: none"> 1. Cognitive competencies such as systems thinking and pattern recognition. An ability to think or analyse information and situations that leads to or causes effective or superior performance 2. Emotional intelligence competencies, including self awareness and self management competencies, such as emotional self-awareness and emotional self control. An ability to recognise, understand and use emotional information about oneself that leads to or causes effective or superior performance. 3. Social intelligence competencies, including social awareness and relationship management competencies such as empathy and teamwork. An ability to recognize, understand and use emotional information about others that leads to or causes effective or superior performance 	<p>Boyatzis R E (2008) Competencies in the 21st Century. Journal of Management Development Vol 27 No 1 2008</p> <p>Introductory paper</p>
Graduate attributes	<p>Identified 4 different levels of attributes:</p> <ul style="list-style-type: none"> • Precursor (basic discipline knowledge) • Complement (useful additional skills) • Translate (transforming disciplinary knowledge through their application) • Enable (abilities that infuse and enable academic knowledge) 	<p>Barrie, S. C. (2006) "Understanding What We Mean by the Generic Attributes of Graduates", <i>Higher Education: The International Journal of Higher Education and Educational Planning</i>, vol. 51,2, 215-241</p> <p>A phenomenographic study to identify graduate attributes to enhance employability. A purposive sample of 15 academics from basic sciences, humanities, professional, medical and</p>

		social sciences were interviewed.
	<p>Identification of three key graduate attributes which were incorporated into policy at the University of Sydney:</p> <ol style="list-style-type: none"> 1. Scholarship: having a scholarly attitude to knowledge 2. Global citizenship: aspiring to contribute to society through roles as members of local, national and global communities 3. Lifelong learning: committed to and capable of continuous learning and reflection. 	<p>Barrie, S. C. (2004) "A Research-Based Approach to Generic Graduate Attributes Policy", <i>Higher Education Research and Development</i>, vol. 23, no. 3, 261-275</p> <p>Working groups of academic staff interpreted the implications in different disciplines and created faculty-based statements which have a 'high level of acceptance' p 273.</p>
A briefing on competency frameworks	<p>A factsheet giving introductory guidance to the term competency, developing a competency framework and considers the application of competency frameworks. Says that 60% of respondents to a survey used a competency framework and 48% of the rest intend to implement one. Smaller companies more likely not to. Defines competency as an outcome based approach to recognizing occupational standards. They are a signal from the organization to the individual of the expected areas and levels of performance. They include behavioural and technical attributes. Getting the balance between too much and too little description is difficult and important. The most popular names found in employer competency frameworks are:</p> <ul style="list-style-type: none"> • Communication skills, • People management • Team skills • Customer service skills • Results-orientation • Problem solving <p>Suggests that when creating competency frameworks organizations need to:</p> <ul style="list-style-type: none"> • Involve managers and employees in the design • Hold group briefings to explain the approach • Provide training to managers • Provide information and training to all employees • Raise awareness by publicizing it in a staff newsletter <p>The argument for these schemes is that they are more fair, clear and open, the argument against is that they can create clones, become unwieldy and focused on the past.</p>	<p>Hogg C (2008) Competency and competency frameworks. CIPD factsheet.</p> <p>Based on a survey of 663 private, public and voluntary organisations available at http://www.cipd.co.uk/NR/rdonlyres/EB18FA28-BD40-4D47-81B9-660034D280C1/0/learndevsr.pdf</p>

<p>Career management competencies</p>	<ol style="list-style-type: none"> 1. Knowing why (work-life balance, international exposure, professional identification, close to decision-making, career progression and search for challenge) 2. Knowing how (operational skills and general business understanding) 3. Knowing whom (professional networks and personal networks) 	<p>Cappellan T and Janssens M (2008) Global managers' career competencies. <i>Career development international</i> Vol 13 No 6 p514</p> <p>45 global managers interviewed from 3 international organisations – mainly Belgian</p>
<p>Team competences</p>	<ol style="list-style-type: none"> 1. Advising – gathering and reporting information 2. Innovating – creating and experimenting with new ideas 3. Promoting – exploring and presenting opportunities 4. Developing – assessing and testing new approaches 5. Organising – arranging how things will work 6. Producing – making and delivering outputs 7. Inspecting – controlling and auditing the working systems 8. Maintaining – upholding and safeguarding standards and processes 9. Linking – co-ordinating and integrating with others 	<p>Margerison C (2001) Team Competencies in <i>Team Performance Management</i>. Vol 7 No 7/8</p> <p>Academic turned management consultant – tested competencies at Shell and elsewhere in workshops</p>
<p>Research and management – led chefs</p>	<ul style="list-style-type: none"> • Technical knowledge (flavours, nutrition, sanitation, food trends, competition) • Communication and team leadership skills • Ability to take criticism (including ability to keep ego in check) • Ability to multi-task, prioritize projects and make decisions • Skilled at helping others • Knowledge manipulation (spread sheets, formulas for conversion etc) 	<p>Birdir K and Pearson T (2000) Research chefs' competencies: a Delphi approach <i>International Journal of Contemporary Hospitality Management</i> 12/3 p 205-209</p> <p>25 research chefs and 12 others in USA and Turkey</p>
<p>Information management education (Library science)</p>	<p>A comprehensive list of competencies grouped under the 4 headings:</p> <ol style="list-style-type: none"> 1. Managing information and knowledge for clients needs and services 2. Mastering information 3. Organisation of knowledge and knowledge resources through information architecture, systems and structure 4. Technology applications and utilisation 	<p>Gorman G E and Corbitt B J (2002) Core competencies in information management education. <i>New Library World</i> Vol 103 No 1182/183 pp 436-445</p> <p>Meta study</p>
<p>Managerial competences and appraisal</p>	<p>Six key competences amongst successful managers were: leadership skills, customer focus, results oriented, problem solver, communication skills and team worker.</p> <p>However the authors identified a disjuncture between key competencies and the criteria that</p>	<p>Abraham S E, Karns L A, Shaw K and Mena M A. (2001) Managerial competencies and the managerial performance appraisal process. <i>Journal</i></p>

	organisations were appraising their staff against.	of Management Development Vol 20 No 10 pp842-852 Survey of 2,500 firms
Competencies and organisational learning	A project to index knowledge by using a semantic web. Makes the point that knowledge and competencies are hard and soft and can be lost to organisations unless they are captured in some way.	Abel Marie-Helene (2008) Competencies management and learning organisational memory. Journal of knowledge management Vol 12 No 6 pp15-30 Researched statistics and algorithm courses at masters level in two French universities
Defines different levels of competency	<p>Job specific competencies These are regarded as not transferrable and therefore not necessarily indicating favourable performance in other functions</p> <p>General management competencies</p> <ul style="list-style-type: none"> • Action management • Change management • Co-ordination • Creativity • Leadership • Motivation • Organisation • Planning <p>Corporate specific competencies</p> <ul style="list-style-type: none"> • Identifying boundaries • Knowledge of how to work the system • Ability to grasp, put into context and respond to relevant issues quickly • Attitude matches organisational culture 	<p>New G. E. (1996) Reflections: A three-tier model of organisational competencies. Journal of Managerial Psychology 11.8 pp44-51.</p> <p>Report based on consultant's experiences of analysing competencies</p>
Global leadership competencies and	<p>Core competencies</p> <ul style="list-style-type: none"> • Self awareness • Engagement in personal transformation (connected to entrepreneurial spirit) • Inquisitiveness 	Jokinen T (2005) Global leadership competencies: a review and discussion. Journal of European Industrial Training Vol 29 No 3 199-216

characteristics	<p>Desired mental characteristics</p> <ul style="list-style-type: none"> • Optimism • Self regulation • Social judgement skills • Empathy • Motivation to work in an international environment • Cognitive skills • Acceptance of complexity and its contradictions <p>Behavioural level competences</p> <ul style="list-style-type: none"> • Social skills • Networking skills • Knowledge of tasks at hand, people, impact of cultural factors • Experience of working internationally 	Literature review
Competencies for Pro-Vice Chancellors	<p>Attitudes</p> <p>Self aware Flexible Open Honest Discrete Visible, outgoing Willing to be wrong/accept advice/support Sensitive to the views of others</p> <p>Knowledge</p> <p>Knowledge of university life Understand how the university system works Understand academic processes</p> <p>Behaviour</p> <p>Work to maintain academic credibility Act as role models Think broadly/strategically Engage with people Listen, consult, negotiate, communicate Delegate</p>	<p>Spendlove M (2007) Competencies for effective leadership in higher education. International Journal of Education Management Vol 21 No5 407-417</p> <p>Semi-structured interviews with 10 PVCs</p>

	Motivate Mentor Build teams	
NHS competencies for commissioners	<p>“To become world class, commissioners will need to develop the knowledge, skills, behaviour and characteristics of a world class organisation. They will do this by developing a set of core organisational competencies.”</p> <p>In summary world class commissioners will:</p> <ul style="list-style-type: none"> • locally lead the NHS • work with community partners • engage with public and patients • collaborate with clinicians • manage knowledge and assess needs • prioritise investment • stimulate the market • promote improvement and innovation • secure procurement skills • manage the local health system • make sound financial investments <p>The process of defining and developing these competencies is dynamic. As commissioners move to operate at world class levels, new competencies will emerge and details of the expectations within existing competencies will sharpen as knowledge grows and experience develops. However, world class commissioning is not an end in itself. In order to be successful, commissioners will need to demonstrate better health and well-being for all, better care for all and better value for all: adding life to years and years to life.</p>	World class commissioning competencies . Policy document from Department of Health http://www.dh.gov.uk/en/Managingyourorganisation/Commissioning/Worldclasscommissioning/Competencies/index.htm accessed 9.2.09
Predictive competencies of effective R & D managers	<p>The main finding is that technical ability is not enough. Key competences included:</p> <ul style="list-style-type: none"> • Leadership • Helping and delegating • Adapting • Setting and managing goals • Human frailty • Interpersonal sensitivity • Reactive attitude towards life 	<p>Dreyfus C R (2008) Identifying competencies that predict effectiveness of R & D managers. <i>Journal of Management Development</i> vol 27.1 pp76-91</p> <p>Multi-method study comparing a sample of 35 highly effective and typical R & D managers.</p>

	<ul style="list-style-type: none"> • Initiative • Managing group process • Self confidence 	
Preparation for working life	<p>A conference paper comparing new undergraduates with seniors at the University of Linköping which highlights</p> <p>Some possible continuums :</p> <p>Social engineer and helper – distinction between professional and private</p> <p>Awareness of competing theoretical frameworks – pluralism and eclecticism</p> <p>Separating personal development and content of studies – personal development through studies</p>	<p>Bayer-Manfred, Lababidi-Tarek. (2003) How does higher education prepare or qualify for work life. Paper presented in handout form for a workshop at the European Conference on Educational Research, University of Hamburg, 17-20 September 2003</p> <p>http://www.leeds.ac.uk/educol/documents/00003513.htm,</p>
Results of interviews with experienced supervisors identifying attributes highlighted by the roles that their PhD students went on to undertake	<p>Is this the globally competent postgraduate?</p> <p>Researcher skills</p> <ul style="list-style-type: none"> • Research design and methods • Methods of analysis • Academic writing • Literature searches • Project management • Ethical issues • Presenting findings (orally and in writing) <p>Philosophy of knowledge</p> <ul style="list-style-type: none"> • How knowledge emerges • Sociology and politics of knowledge creation • Philosophical approaches to ethical issues • Disciplinary and interdisciplinary ways of thinking • Enculturation in different cultures/disciplines <p>Career Management</p> <ul style="list-style-type: none"> • What is an academic? • Career path options • Understanding life phases • Creating a cycle of credibility 	<p>Lee A (in press) <i>Helping New Postgraduates</i>. Maidenhead. McGraw Hill/Open University Press</p>

	<ul style="list-style-type: none">• Asset management• Financial planning, grant applications and fundraising• Networking skills• Intellectual property and patent law Strategic planning and communication <ul style="list-style-type: none">• Teaching & learning• Influencing large numbers of people (via media and in organisations)• Influencing government• Large scale project management (where there are many powerful stakeholders)• Teamworking & networking• Political/social/strategic analysis skills• Intercultural issues including language and education• Research cultures and building research capacity• The role of public service	
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APPENDIX 2: Mesol Competencies

Management competencies geared to management training in the National Health Service

Extract from Weighman 1994, pp89-92

Managers should manage themselves, ie be able to:

Manage their own managerial performance

- Set (or accept) standards of personal managerial performance
- Monitor their own performance against those standards
- Identify personal shortcomings
- Seek to achieve personal importance

Manage their time

- Identify key activities in their work
- Assign suitable priorities to their activities
- Allocate their effort appropriately
- Delegate work effectively

Manage personal stress

- Organise their work and their lives to cope with pressures
- Adjust readily to change
- Distinguish between pressure and stress
- Recognise the symptoms of personal stress
- Take appropriate actions to alleviate stress

Adopt an appropriate management style

- Analyse accurately their environmental circumstances
- Identify their own preferred management style
- Adjust their style to the needs of their situation

Manage their own careers

- Seek to match their personal and organisational objectives
- Keep themselves up to date
- Prepare themselves systematically for advancement
- Learn how to learn from their experiences

Managers should manage people, ie they should be able to:

Select people

- Analyse jobs systematically
- Determine job requirements accurately
- Prepare accurate job descriptions
- Plan selection interviews systematically
- Conduct or participate in selection interviews effectively
- Make sound and justifiable judgements about people
- Match people to jobs and jobs to people

Organise people

- Establish an appropriate organisational structure in their own departments
- Define responsibilities clearly
- Establish accountability and reporting requirements

Lead people

- Motivate people

- Harness their energies and efforts to get things done
- Harmonise their personal and organisational objectives
- Act appropriately to improve their performance
- Reward people in appropriate ways

Develop people

- Identify people's needs for growth and development
- Assess their job performances accurately and systematically
- Appraise them sensitively and constructively
- Provide them with suitable opportunities for development
- Counsel them
- Coach them
- Train them
- Support them

Communicate with people

- Inform people (notify, report, tell, teach)
- Influence people (persuade convince)
- Seek information from people
 1. Accurately and succinctly in writing through correspondence, reports and papers
 2. Confidently and effectively in speech through briefings, presentations, negotiations, interviews, counselling, teaching

Exercise discipline

- Set or adopt standards of behaviour and performance
- Monitor individual performances against those standards
- Take appropriate action when deviations occur
- Follow disciplinary interviews systematically
- Conduct disciplinary interviews effectively

Handle conflict

- Deal sensitively and appropriately with grievances
- Identify accurately the causes of grievances and conflict
- Seek to harmonise where possible

Establish working relationships

- Build strong and effective teams
- Build effective networks for information and support
- Develop alliances to facilitate work

Conduct and participate in meetings

- Plan and organise meetings suited to their intended outcomes
- Chair meetings firmly, confidently and sensitively
- Contribute to discussions confidently and persuasively
- Record minutes in a manner appropriate for their purpose

Managers should manage their managerial jobs, ie they should be able to

Set objectives

- Interpret directives and objectives from higher authority
- Set clear and attainable objectives for their own section/department

Forecast future requirements for their own section/department

- Scan their environment for developments that might affect them
- Identify the impact of future events
- Plan accordingly using appropriate planning techniques

- Assess accurately the likely resource requirements
- Obtain the required resources
- Take appropriate action to obtain the necessary resources
- Exercise control (over resources, performance, output and quality)
- Establish control systems
 - Operate budgets
 - Control stocks
 - Establish standards which are attainable and acceptable
 - Monitor performance against those standards
 - Take appropriate action to correct deviations and discrepancies
 - Adopt suitable ways of improving performance, output and quality
- Deal with problems (and opportunities) as they arrive
- Analyse problems and opportunities systematically
 - Identify their needs for further information
 - Assemble information from available resources
 - Cope with uncertainty
 - Generate practicable solutions
 - Evaluate potential solutions systematically against agreed criteria
 - Reach justifiable decisions
 - Manage the implementation of those decisions
- Manage change
- Cope with imposed change
 - Initiate necessary changes in their own organisations
 - Plan for the smooth implementation of change
 - Identify and take account of the predictable impacts of change
 - Apply change-management techniques to accomplish change

Managers should manage in their environment, ie they should be able to:

Cope with problems stemming from the organisation in which they work

- Unsuitable organisational structures
- Unclear or overlapping responsibilities
- Inadequate communication flows
- Boundary frictions between different departments
- Incongruent objectives
- Conflicting imperatives
- Conflicting perspectives
- Different timescales
- Different cultures, values, languages in other departments

Take due account, in the way they manage, of factors within their organisation

- Organisational objectives
- Organisational constraints
- Organisational policies
- Organisational norms
- Organisational culture
- Organisational politics

Take due account in the way they manage of factors outside their organisation

- The primacy of the interests of the patient/climate
- The impact of the local context in which they are working

- The impact of the national context
- The law as it affects health care provision and management
- The economy and the provision of resources
- Health economics
- The potential impact of demographic trends locally and nationally
- Sociological trends and rising expectations
- The impact of technological developments on health care provision and management

Influence the organisational 'tone' of their own section/department

- Adopt a suitable management style
- Establish appropriate standards in an appropriate way
- Monitor standards closely

Additional appendices [included as print-only papers to the report]

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