



Science and Engineering

at The University of Edinburgh

Postgraduate Supervision in Science and Engineering: Supervisor Refresh

Bob Fisher

Dean of Research Careers, CSE

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College Office

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Inst. for Academic Development



Session Aims

- To provide supervisors with information on what is expected from them by:
 - the University
 - funding bodies
 - students.
- Regulations, administrative structures and support for supervisors.
- The process of supervising PhD students:
 - what are you expected to do?
 - what should you do when things go wrong?
 - what do students/UoE/RC expect re skills training, career advice *etc.*



Science and Engineering

at The University *of* Edinburgh

Introduction and Policy Framework

Bob Fisher

Dean of Research Careers



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Why do we have PhD students?



Why do we have PhD students?

Lots of answers working together:

- Advance supervisor's research agenda
- Research training for student
- Open career doors for student
- Fee income for University
- University research power

Different needs -> different agendas and perspectives

You need to balance these needs



Importance of PG Training: UK Strategy

Postgraduate study is fundamental to the development of the highest level of science and engineering skills.

It develops specialist knowledge and, particularly at the PhD level, trains students in the techniques and methods of scientific research.

The majority of the UK's future scientific researchers will need postgraduate qualifications, as will those in other countries.

Any reduction in the supply and quality of scientists and engineers trained to this level is therefore of primary importance to the UK economy.



The PhD Course is a Research Training Course

The PhD student is assessed on:

- Knowledge of literature
- Ability to frame an unsolved problem
- Ability to advance the solution
- Ability to assess that advancement
- Critical commentary on his/her progress
- Ability to articulate all of these clearly

Research is part of the training, but the focus is on training these skills.



Supervision: Basic Expectations

- Obligation to provide appropriate individual supervision and support throughout the student's career: by supervisor
- Active, structured and monitored process: by supervisor and graduate schools (*Murdo Gillanders*)
- Encourage and support generic skills training: by supervisor and Inst for Academic Development (*Sheila Thompson*).



...skills acquired by PhD graduates do not serve their long-term needs. Currently, **PhDs do not prepare people adequately for careers in business or academia**. In particular, there is insufficient access to training in interpersonal and communication skills, management and commercial awareness.



Our Contract with the Student

The supervisor is **required** to
provide the **resources** and **support** so
the student can **work for** and **write a**
good thesis in the **time allocated**.



Why we are here today

Supervisors are accountable for the quality of their supervision and its conformity with university regulations and expectations.



What's coming?

- Thoughts on PhD research training
- Thoughts on student supervision and teams
- Career development
- Regulation and procedure update
- Generic skill training resources
- Some problem cases to get you thinking



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General questions?

How to be a good supervisor

Bob Fisher

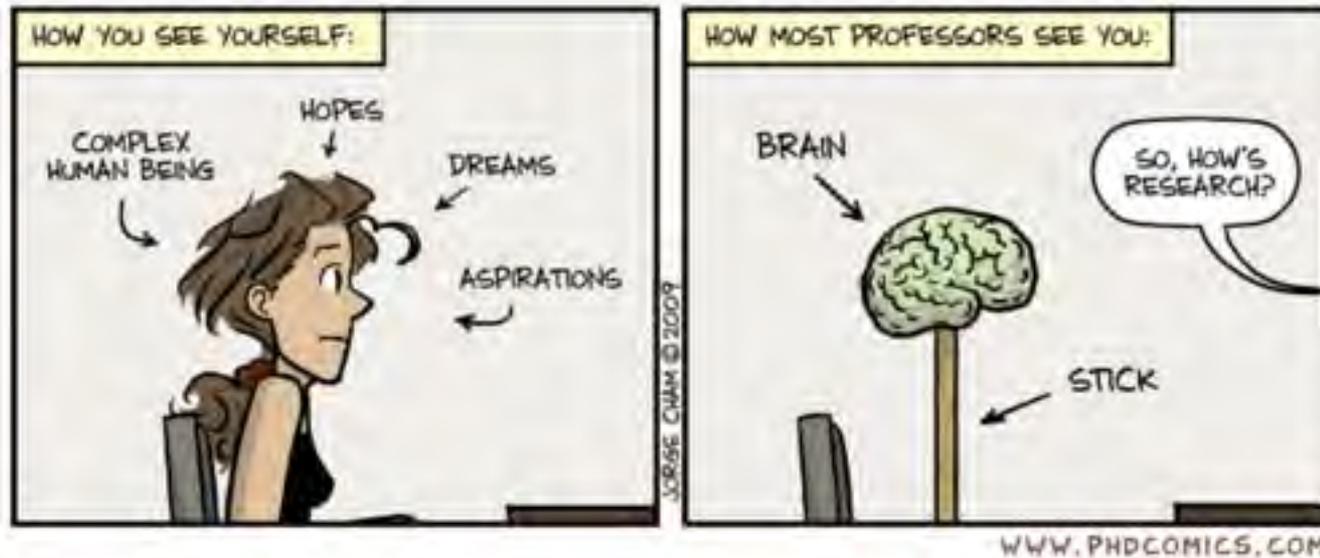
CSE Dean of Research Careers

Based on presentations of many previous Deans



Preamble...

Each student will have their own goals and aspirations...



...can there be “general rules”? Perhaps some, or at least definition of good practice.

PS: how do students see you?

Research Training

Supervision Approach?

Option?...

...project management (focus on output of results)

versus

...personnel management (focus on output of well trained researchers)!

Current view favours the latter: the PhD is a **research training** degree.

Research Topic

Different approaches to topic selection:

- Student proposes – eg. has own funding
- Supervisor proposes
- Work together to find a good topic

May depend on funding source. Eg, if research contract based, then topic is linked to the project.

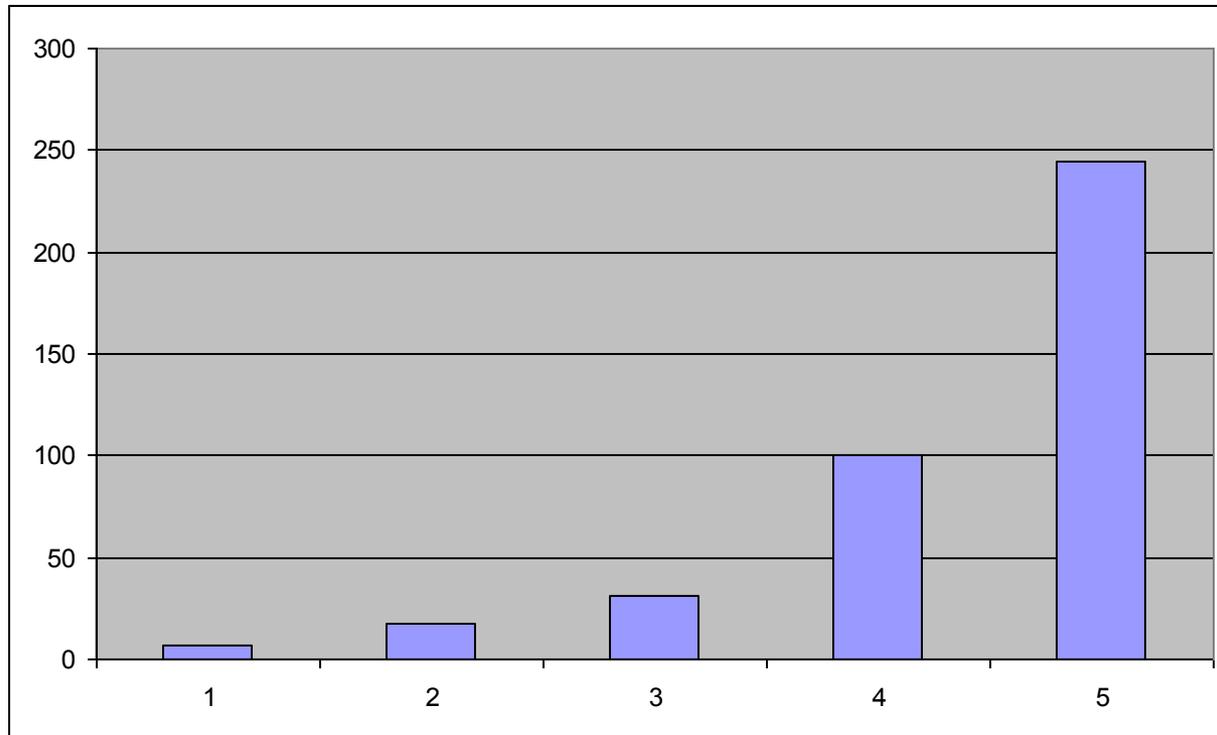
Don't supervise topics in areas that you are not somewhat prepared for.

Supervision: Timely Completion

- Timely completion is vital to the student and the university.
- PhD programmes used to be 36 months: it's not so simple any more!
- Changing requirements from funders –
 - Grant specific
 - School-funded programmes
 - 3.5 year PhD funding (eg. EPSRC)
 - research skills training
 - 1+3 model; 4 year programmes
 - generic/transferable skills training

Supervision

My supervisor/s have the skills and subject knowledge to support my research adequately



Survey of PhD students

Characteristics students like to see in supervisors

- Honesty, enthusiasm, organised
- Helpful, defend student's interests
- Approachable, good listener, reassurance

Survey of PhD students

Characteristics that are unhelpful in supervisors

- Too busy, absent, forgetful, controlling
- Not committing enough time to you
- Not finding out what you want from the PhD/MScR

The perfect supervisor...

- ▶ Inspires students to extend themselves and their subjects to the limits (keeps up with the science!)
- ▶ Defines and explains the *management* structure... (who is responsible for what?)
- ▶ **Jointly** establishes a *programme* to meet the needs of the individual (defines **both** project + training)
- ▶ Monitors progress regularly (revises targets and records actions)
- ▶ Defines and reviews the appropriate level of *management* for individual students

Students

When recruiting look for ...

Desirable

- commitment /tenacity
- flair/creativity
- organisational skills
- teamworking & communication skills

But not

- obsessiveness, obstinacy and intransigence
- dilettantism and butterfly/unmethodical mentality
- unadventurous and/or mechanical approach
- too many social/external commitments

Whilst attending to the needs of the individual students be aware that...



- ▶ a research group with too many dullards is hard to manage
- ▶ a research group with too many mavericks is impossible to manage
- ▶ the dynamics of a group can change dramatically when personalities clash!

Research group balance is easily upset!



Funny?
This
could be
YOU!

The Paper Trail

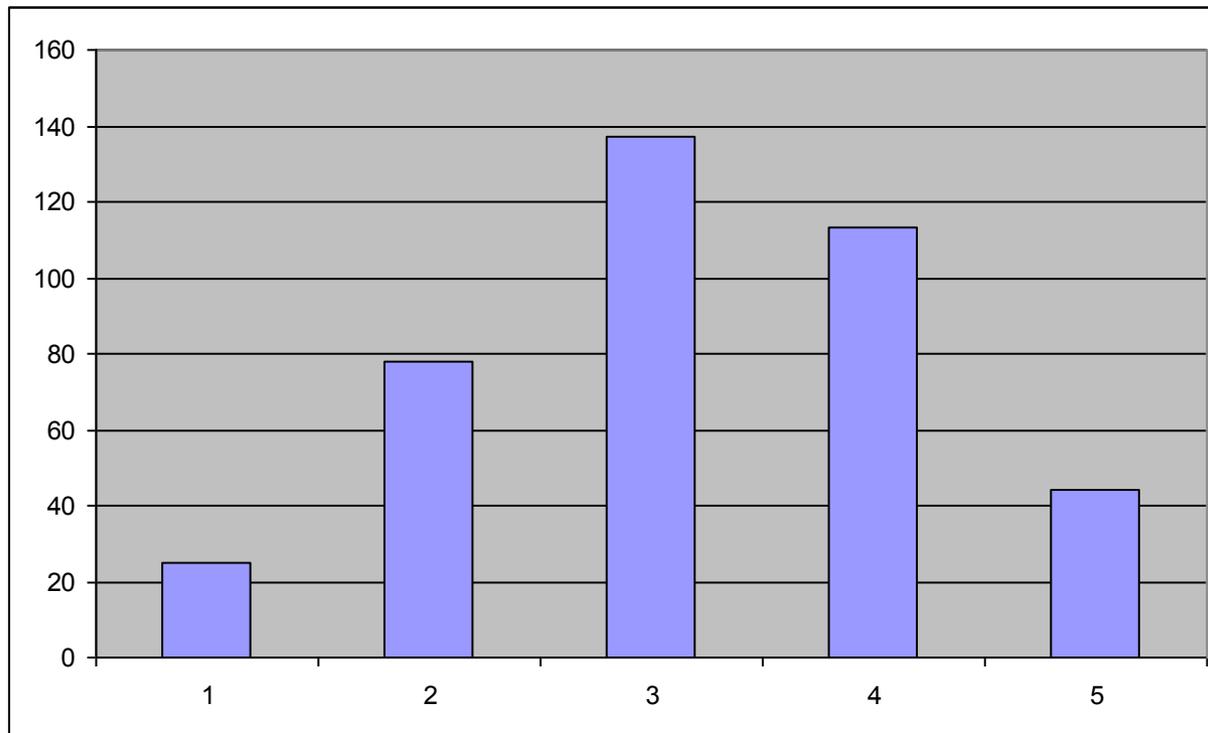
Most PhDs go just fine, but

... difficult behaviours, mental illness, incapability, ...

- ▶ Supervisors, schools may take actions ...
- ▶ Students may not accept decisions and appeal ...
- ▶ Appeal committees look at evidence, and err on side of student
- ▶ So ...
- ▶ Try to keep written records: meetings, incidents, feedback (+/-), emails, ...
- ▶ Can ask student to record a brief meeting minute, topics discussed, achievements, action items, ...

Career Development

I am encouraged to think about the range of career opportunities that are available to me.



Career Development

What we do worst (PRES scores)

- In part natural given focus on thesis
- But not all students want or achieve research careers

Ask student about career goals (may change)

Occupations: Science & Engr

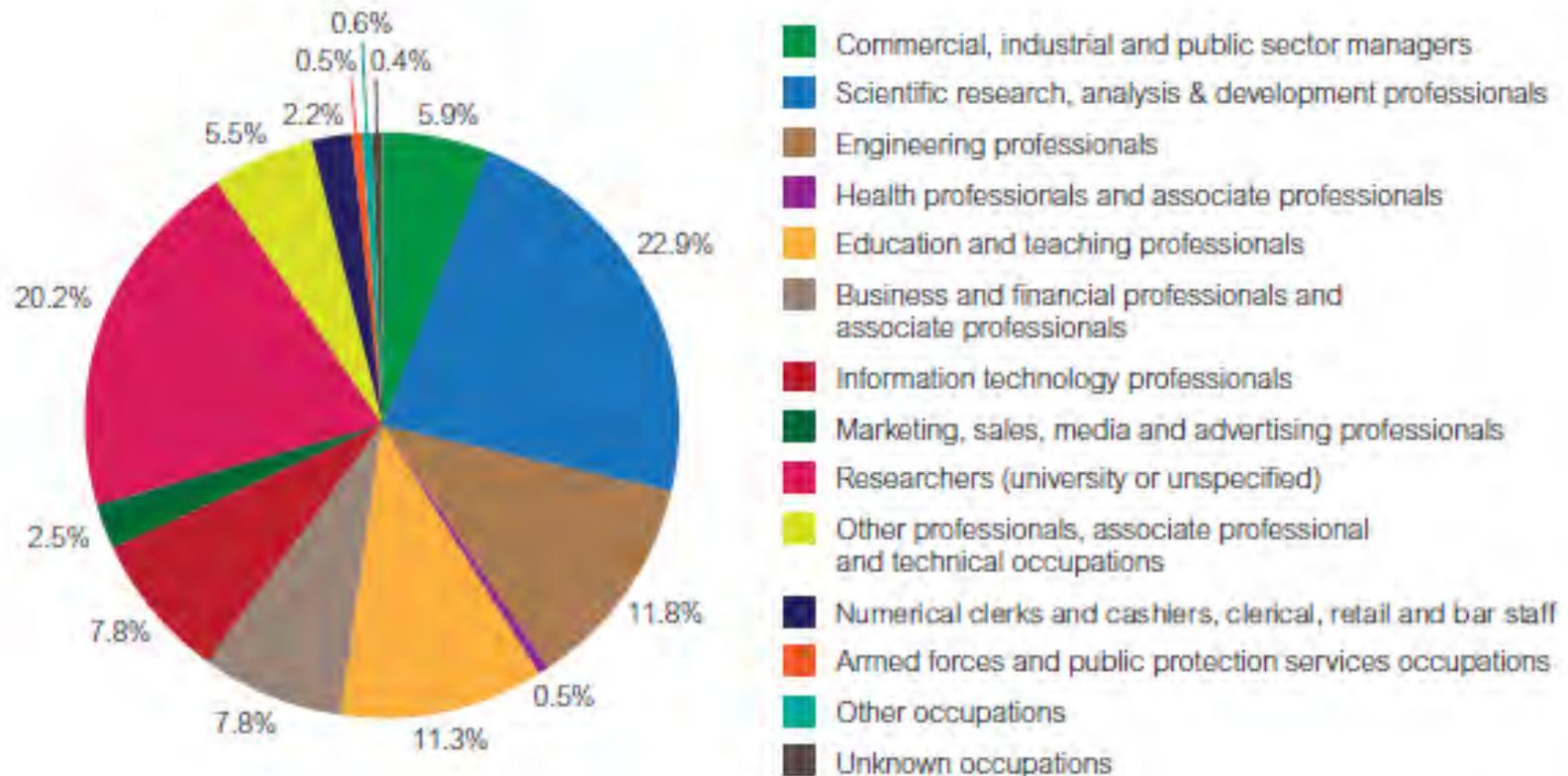


Figure 3: Types of work entered by UK-domiciled PS&E doctoral graduates (2007), based on Standard Occupational Classifications (SOC) returned in the DLHE surveys⁶

Careers Service Support for PhD Students

www.ed.ac.uk/careers/postgrad

- Web resources for students on:
 - Options after a PhD, including advice for developing an academic career, as well as non-academic careers
 - CVs, applications and interviews
 - Researching careers and making career decisions
 - Case studies of what previous PhD graduates are doing
- Group workshops for PhDs in College of Science and Engineering
 - Career Strategies for PhD Students (options post-PhD, factors impacting on career decisions, job search and applications)
 - Introduction to MBTI Personality Type (can help improve communication and team working)
- Individual careers consultations
- Employer presentations and careers fairs (non-academic)
- Want dedicated careers workshops or events for students in your School?
Contact Sharon Maguire - sharon.maguire@ed.ac.uk or Tel: 650 4670

More Thoughts

Some Easy Things to Try

1. Tell your students about the IAD's courses and resources
2. Tell student about subject specific web resources
3. Have your students had an opportunity to go to a subject-specific training course or summer school?
4. Has the student been connected up with other students working on complementary topics, perhaps by sharing office or common spaces?
5. Have you let the student know about the many Student Association societies and how many are open to post-graduates?
6. What do you know about the student's family and home country?

Plagiarism, eg. poor scholarship

- ▲ Supervisors must make sure that their students are aware of both the requirement for scrupulous honesty in presenting their research and the conventions required for acknowledging the work of others in their particular subject.

Research Ethics

Eg: issues related to humans, environment, living organisms, safety, ...

All Schools have a Research Ethics policy

Some Questions

1. How many students in group?
2. How often to meet?
3. When has a student done enough to submit?
4. Pressure to publish?

Resources

- ✦ A Code of Practice for Supervisors and Research Students
<http://www.postgrad.ed.ac.uk/RESCODE/Default.pdf>
- ✦ How to Get a PhD: A Handbook for Students and Their Supervisors, E. Phillips, D.S. Pugh
- ✦ Vitae research resources: www.vitae.ac.uk
- ✦ Inst. for Academic Development



PGR Administration in the College of Science and Engineering

Murdo Gillanders

Science and Engineering

College Office

Weir Building

King's Buildings



Administrative Structure

- The **University** has various Vice Principals who have an interest in Postgraduate Studies and a Researcher Experience Committee.
- This **College** has a Dean of Research, College Committees and a Postgraduate College Office.
- Each **School** has a Head of Graduate School who provides Leadership to the Graduate School.
- Each **School** has a Postgraduate Committee.



The College Postgraduate Research Office

- The College Office does the following:
- Advice on policy and procedures
- Paperwork – mainly for on-course issues and at examination
- Administration for College Committees

Stage one: selection and admission

Academic Selection and Admission

- Owned by the School - EUCLID
- Academic judgement for selection
- Admission – English language
 - Visa / ATAS / CAS
 - confirmation of attendance



Stage two: on programme

Monitoring Progress: 1st Year and Annual Reports

- Carried out mainly in the School
- Normally within 9 to 12 months of enrolment and annually thereafter
- Student should present his/her work in progress to an assessment panel
- Panel should comprise of all supervisors and an independent party
- Student must also present a forward plan of his/her work
- Gives an opportunity to
 - Confirm registration for degree
 - Suggest re-registering to a lower degree
 - Extend the probationary period
 - Discontinue registration
- Panel must feedback to student



Monitoring Progress: 1st Year and Annual Reports

THE UNIVERSITY OF EDINBURGH

CONFIDENTIAL

FIRST YEAR REPORT ON A POSTGRADUATE RESEARCH STUDENT

THIS REPORT MUST BE SUBMITTED BETWEEN 9 - 12 MONTHS OF FIRST REGISTRATION

Candidate

School

Qualification Sought

Prescribed Period

Field of Study/Thesis Title

Prescribed Programmes

Principal Supervisor

Assistant or Co-Supervisor(s)

- Has the candidate reported at least twice a semester.
(i) in person? YES/NO (ii) in writing? YES/NO (iii) if in writing, from where? _____
- Has the candidate satisfied the terms stipulated at the time of admission? _____
- Please describe the candidate's progress by circling the appropriate phrase below.
Very good / good / satisfactory / disappointing / unsatisfactory
- If you have circled *either* "satisfactory", or "disappointing" or "unsatisfactory", please comment and indicate whether you are concerned about the eventual success of the candidate. *(If necessary, please use a separate sheet).*
- If progress has been less than satisfactory, please give date of next review.
- Should the candidate be permitted to continue studies? YES/NO *(If no, please give reasons under question 15).*
- The First Year of study is probationary. The candidate's degree registration must now be confirmed, or changed or the probationary period of study extended. If you wish to recommend any change in the candidate's current registration, please indicate.
(i) the degree for which the candidate should be registered _____
(ii) the period of study (or further probationary period) _____
(iii) the effective date _____
(iv) what conditions (if any) are to be laid down _____
N.B. If a candidate's probationary period is extended beyond 12 months, a further period of 3 - 6 months for full time candidates or 6 - 12 months for part-time candidates may be granted by the committee. Candidates must be assessed again at the end of this further period.
- Do you recommend any change of supervisor? YES/NO If yes please give details
- What thesis title or precise area of study do you now recommend? (See (c) above)
- If the candidate's first language is not English, please circle below your assessment of English language ability.

- (i) **Spoken** No problems / Adequate / Requires Tuition / Seriously Inadequate
(ii) **Written** No problems / Adequate / Requires Tuition / Seriously Inadequate

11. Have you any reason, at this stage, to suppose that the candidate will not submit his/her thesis within
(a) the prescribed period of study, or
(b) the maximum period of study?
If so, please give reasons. *(If necessary, please use a separate sheet).*

12. Have you and the candidate agreed a research programme? YES/NO

13. Has the candidate's progress been formally assessed by an assessment panel? YES/NO

14. Has written feedback on the assessment been provided to the candidate? YES/NO

15. General comments on the candidate's ability, progress and circumstances, including (where required) statements in support of recommendations made at (6) and (7). *(If necessary, please use a separate sheet).*

Signature of Principal Supervisor _____ Date _____

Comments by Assistant Supervisor(s) (Comments are obligatory if question 4 has been answered).
(If necessary, please use a separate sheet).

Signature of Assistant or Co-Supervisor(s) _____ Date _____

Comments by Head of School (Comments are obligatory if question 4 has been answered).
(If necessary, please use a separate sheet).

Signature of Head of School _____ Date _____

N.B. Please return the completed report to the Secretary of the College Postgraduate Studies Committee by _____ or as soon as any relevant examination results are available, together with
(i) the assessment panel's report, signed by all panel members and the candidate,
(ii) if appropriate, the report submitted for assessment by the candidate.

Monitoring Student Non-attendance

- UKBA require the University to monitor the non-attendance of OS students
- The University's policy on equality means monitoring of non-attendance is applied to all students
- For PGR information about the College's implementation of this policy is available here:

<http://www.ed.ac.uk/schools-departments/science-engineering/current-students>

The process is owned by the School

- Patterns of non-attendance should be reported to the College

Concessions

Interruption of study

- Supervisor should apply, via the Head of Graduate School, to College on student's behalf in good time
- To "stop the clock" for a defined period

Requires a case to be made:-

- Illness or other debilitation
- Compassionate leave
- Resource failure
- Employment
- Requires evidence
- May result in withdrawal of visa

Extension

- Supervisor should apply, via the Head of Graduate School, to College on student's behalf in good time
 - Student running out of time
 - Student ran out of time
 - Problems with data or lab work
- Requires a case to be made:-
 - An end in sight
 - A plan for reaching that end
- BUT a continuation fee is due

Withdrawals/Discontinuations

Withdrawals

- Best if initiated by the student
- Can be applied for by supervisor on student behalf, but following joint agreement with the student
- Reason for withdrawal must be given
- Independent letter from student will be sought if not provided
- If as a result of student deciding career choice was wrong, best if happens in first year

Discontinuations

- Usually initiated by College Office when:-
 - Student has gone away (ie no contact)
 - Student fails to submit
 - Student fails to make corrections
 - Student fails to resubmit
- Can be initiated as a result of an annual report
- Can lead to appeals/complaints

Stage three: Examination

- Write up
- Student: Submission of 'Notification of Intention to Submit' forms
- School: Nomination of examiners
- College: Approval of BoE
- College Office: Appointment of examiners
- Student: Submission of draft thesis
- College Office: Formal examination paperwork
- Examiners: Independent report
- Examiners: Oral examination
- College Committee: Approval of examiners reports and recommendations
- Student: Completion of recommendations and corrections
- Internal Examiner: Confirmation of corrections
- Student: Submission of bound thesis
- College Office: Student 'eligible to graduate'

Complaints

Complaints can happen when a student is seriously dissatisfied with a UoE service

- Personal support: careers, supervision
- Equality and diversity issues
- Academic services: library and computing
- Teaching and academic facilities: labs

Students should be directed to

- EUSA
- Formal UoE complaints procedures

Appeals

Appeals can only be made against the decision of a Board of Examiners

These happen when students

- Circumstances are not known to the awarding body
- Lacks the resources to complete the project
- Have demonstrably inadequate supervision
- Were not fairly examined

Students should be directed to

- EUSA
- Formal University PG Appeals Procedure



International Students

Pre-Arrival Guidelines

- Application: overseas qualifications, ATAS, CAS, English language, finances
- Immigration and Visa issues
- Health Insurance
- Police registration
- Accommodation
- Entry to the UK
- Welcome Service

Post-Arrival Guidelines

- Identifying differences in study skills and methods
- Follow up TEAM (test of English at Matriculation) recommendations
- Extended family here or overseas
- Social life
Lab colleagues; International Centre; Virtual International Community; Halls of Residence; Societies; Part-time job; EUSA.



Sources of Advice

Offices

- Other PG Supervisors
- Postgraduate Committee or Advisor within your school
- College Office
- Researcher Experience Committee
- English Language Teaching Centre
- International Office

<http://www.ed.ac.uk/schools-departments/science-engineering/staff/academic-student-administration/research>

Websites/Publications

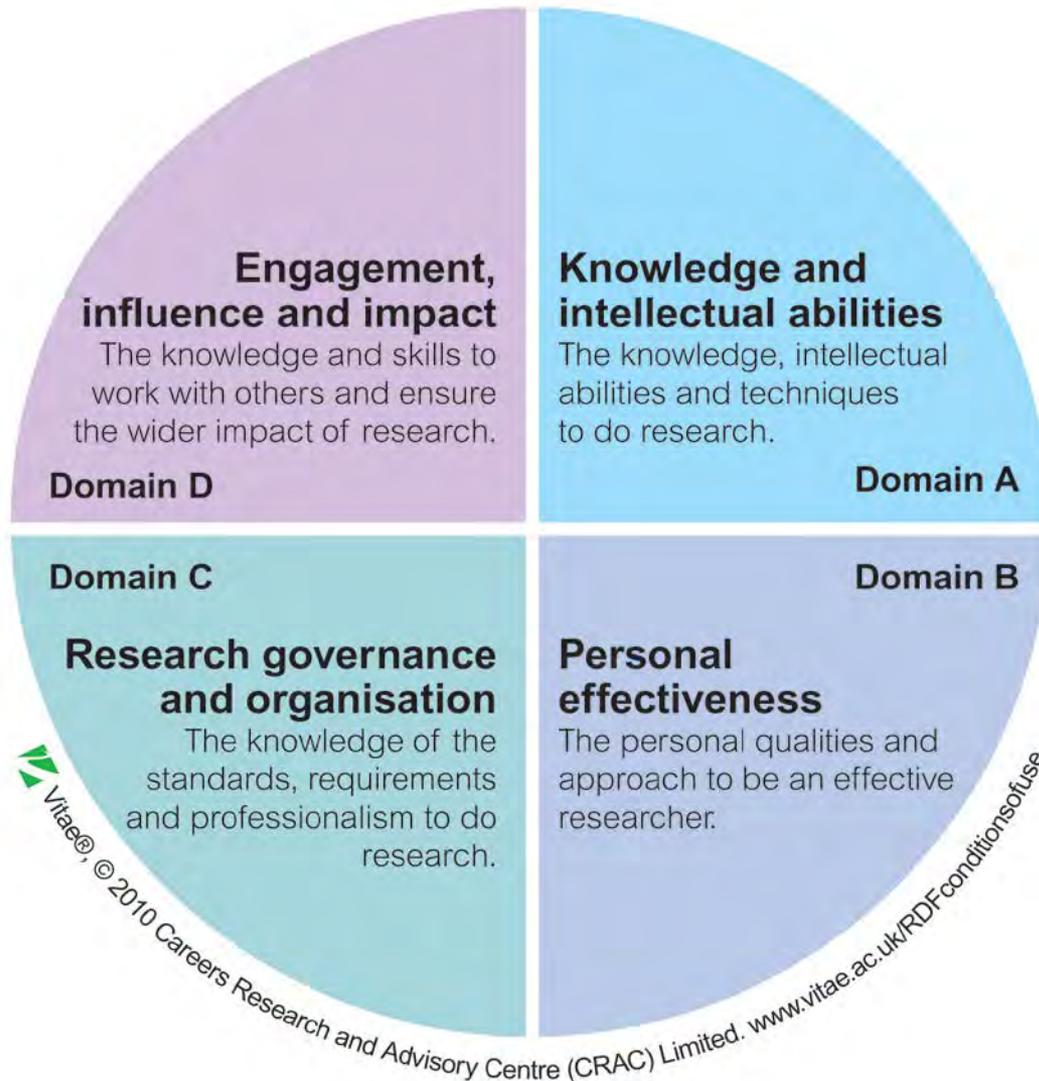
- University Codes of Practice, Guidelines and Regulations
 - Discipline
 - Complaints
 - Good Practice in Research
 - Assessment Regulations
 - Plagiarism and Research Misconduct

<http://www.ed.ac.uk/schools-departments/academic-services/staff>

Engagement with transferable skills training

Fiona McCabe
Researcher Development
Institute for Academic Development

The Expectation



Research Councils;
Funding Councils,
The QAA,
The University,
other sponsors,
and employers
all expect PhD
students to develop
skills beyond their
research.

vitae
realising
the potential
of researchers
Incorporating the UK GRAD Programme and UKHERD

What do researchers do?

First destinations of doctoral graduates by subject

Analysis of first employment destinations of doctoral graduates 2003-2007 from UK universities by discipline and subject

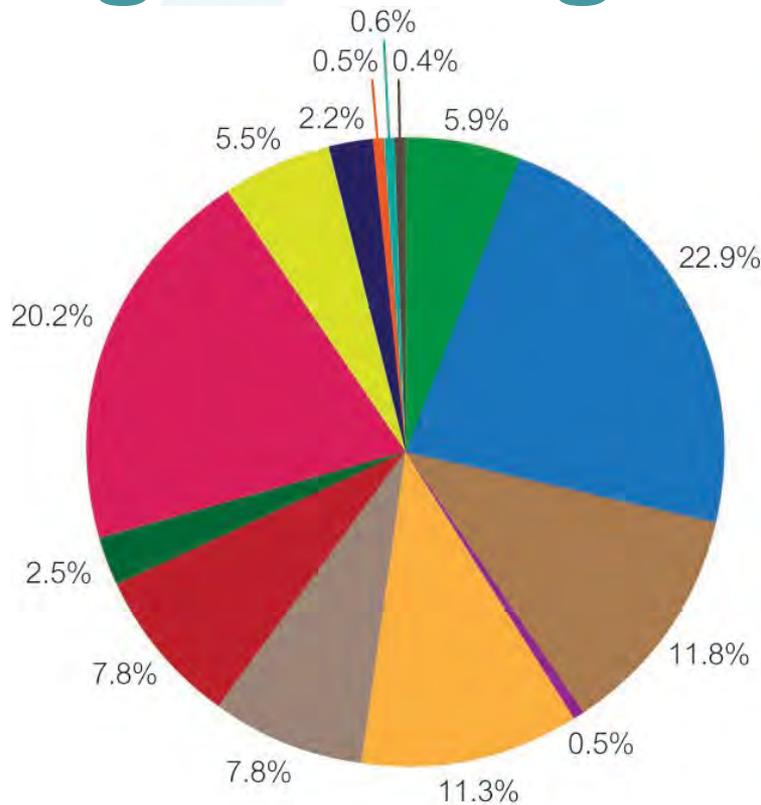
- First-ever analysis of doctoral destinations by subject areas
- Summary of first destinations of doctoral graduates between 2003-2007
- Illustration of the range of occupations undertaken by doctoral graduates

Vitae is supported by Research Councils UK (RCUK), managed by CRAC: The Career Development Organisation and delivered in partnership with regional Hub host universities

RESEARCH COUNCILS UK CRAC

“What do researchers do?” First destinations of doctoral graduates

Occupations: Physical Science and Engineering



- Commercial, industrial and public sector managers
- Scientific research, analysis & development professionals
- Engineering professionals
- Health professionals and associate professionals
- Education and teaching professionals
- Business and financial professionals and associate professionals
- Information technology professionals
- Marketing, sales, media and advertising professionals
- Researchers (university or unspecified)
- Other professionals, associate professional and technical occupations
- Numerical clerks and cashiers, clerical, retail and bar staff
- Armed forces and public protection services occupations
- Other occupations
- Unknown occupations

Specific needs throughout the PhD

Getting started

Developing good
scholarship, language,
& academic culture

Completing a PhD

project planning, team
work, stats, collaboration
time management

Mixing with other students

social and intellectual
benefits, peer support,
networking

Presenting the results of a PhD

presentations, public
engagement, thesis writing,
academic paper writing

What students want: PRES

- Survey reveal (National results):
 - Skills development is important to students
 - Research Skills are vital and linked to timely submission
 - Both are viewed positively at Edinburgh
- Your role is crucial – by far the most significant factor in take-up of training by students (Edinburgh Results):
 - Have you discussed your training needs with your supervisors during the current academic year?
 - Yes: 60%

What Students Want:

Internal survey

- Be aware of their training needs, both research related and generic.
- Have an interest in their work and progress.
- Adapt their supervisory style to the student, and be approachable.
- Give critical and positive feedback on written work.
- Have faith!

What Supervisors can do

- **Raise awareness of skills:**
 - realistic view of full range of career options
 - development during PhD
 - gaps in skills
 - relevance to PhD completion and for future
- **Point students towards training opportunities**
- **Identify gaps in available training and support**
 - Devolved Funding and School specific support

Research

Prior experience

Supervisor Support

**External
Courses**

**School
Courses**

**Skills
Development**

**External
Activities -
e.g. schools
outreach**

**Web-based
information &
resources**

**Individual
advice &
support
e.g. careers**

**Skills Training
Programme - IAD**

**Central courses
- library, IS Skills**



How the IAD can help

- Flexible Programme:
 - course choices
 - timing
- Designed for PhD Students:
 - expert trainers
 - high quality
 - appropriate group sizes
- No charge to students

Effective
Researcher



Ingenious
Women



COMPASS

- Orientation courses and social events designed specifically for first year international PGRs
- 9 events per year
- A chance to socialise, gain an understanding of academic culture and build a network of peers from a variety of disciplines.

<http://www.ed.ac.uk/iad/compass>

Induction: PG Essentials

The screenshot shows a web browser window displaying the WebCT interface for 'Starting your PhD'. The page title is 'Starting your PhD' and the breadcrumb trail is 'Your location: Course Content Home > Postgraduate Essentials Home > Starting your PhD'. The main content area features a navigation menu with links for 'home', 'my notes', 'contact', 'resources', 'help', and 'log off'. Below the menu, there is a section titled 'Starting your PhD' with a sub-section 'Introduction'. The introduction text states: 'The PhD was a unique opportunity for me to explore an original idea, nothing at all fast compared to completing a Master's'. A video player shows a woman speaking. The text continues: 'Starting a PhD is an exciting and challenging time. You'll be meeting new people, exploring new ideas and techniques, developing a range of new skills and advancing old ones, and finding out all about how research is funded and conducted in your field of study. As with anything new, there are a number of adjustments to be made when starting life as a PhD student. For example, the academic demands of a PhD are a considerable step up from Honours. If you're lucky, your supervisor will provide you with the research equivalent of training wheels until you find your balance. But be warned - the expectation is that you'll become independent pretty quickly. Your supervisor will always be interested in your journeys and discoveries, but he or she will be looking to you to gradually take 'ownership' of the project. This module covers the essential tasks of the first weeks of candidature - the things that will get you set up as a member of your department and enable you to get down to work. It also guides you to develop an overview of your candidature as a PhD student - to think about why you've enrolled in a postgraduate research degree and what your journey for the next 3 years might look like. Finally, we hope you'll take the opportunity to meet the other people on the course and exchange ideas and experiences about beginning postgraduate research. Visit the Starting Your PhD Forum. This course is partly about meeting other people dealing with the same issues as you. Click on [Forums](#) and you will see a list of forums. Go to the Postgraduate Lounge and introduce yourself. Perhaps you can tell each other where you are, and your PhD topic for a start.'

- Online course for new PhD researchers.
- Flexible and interactive.
- Aimed at equipping students with the essential knowledge needed to make the best start to their PhD.

Postgraduate-led Initiatives



- Competitive funding is available (University Researcher-led Scheme)
- Students have used this to develop:
 - On-line journals
 - Workshops and seminars
 - Networking and social events
 - Conferences

Meeting expectations



Training is available in each domain.

Other Sources of Training and Support

- Careers Service
 - dedicated PG website and drop in support
- Library
 - individual and on-line support
- Information Services
 - Courses and resources, IT support
- English Language Teaching Centre
 - English and modern languages

Getting in Touch...

If you would like any advice or information on the skills training available to your students, don't hesitate to contact us.

www.ed.ac.uk/iad/doctoral
Fiona.mccabe@ed.ac.uk