

Doctoral Schools and Transferable Skills

Bologna Seminar: 3rd Cycle Degrees



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Graduate School Dimension

- Overview
- Doctoral training and Bologna
- Graduate Schools and their role in PG education
 - Range of responsibilities
 - Transferable skills to support research training
- Conclusions

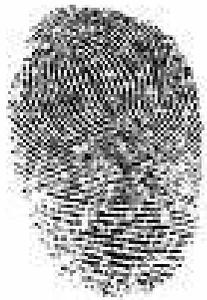
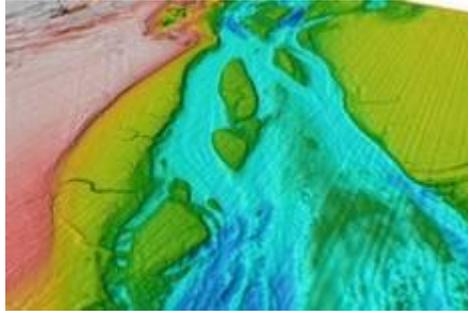


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Global challenges need global solutions



We know many of the global challenges

- Climate change
- Depletion of natural resources
- Improving healthcare

• Now we need global solutions

- Global brainpower
- Education and research on an international stage
- Innovation, knowledge integration/transfer

• Our universities have a key role to play

A knowledge society

Knowledge forms the basis for

- Personal development and success
- Development at institutional, national, regional and global level

Society requires

- More highly skilled professionals
- Greater innovative capacity

Universities are critical in providing

- Intellectual capacity
- Research potential
- **Linking education and research activities to societal needs, and their application in industry, commerce and enhancing the quality of life.**



The most effective knowledge transfer

- The most effective route for knowledge transfer
 - Production and employment of good graduates
 - Particularly at PhD (doctoral) and postdoctoral level



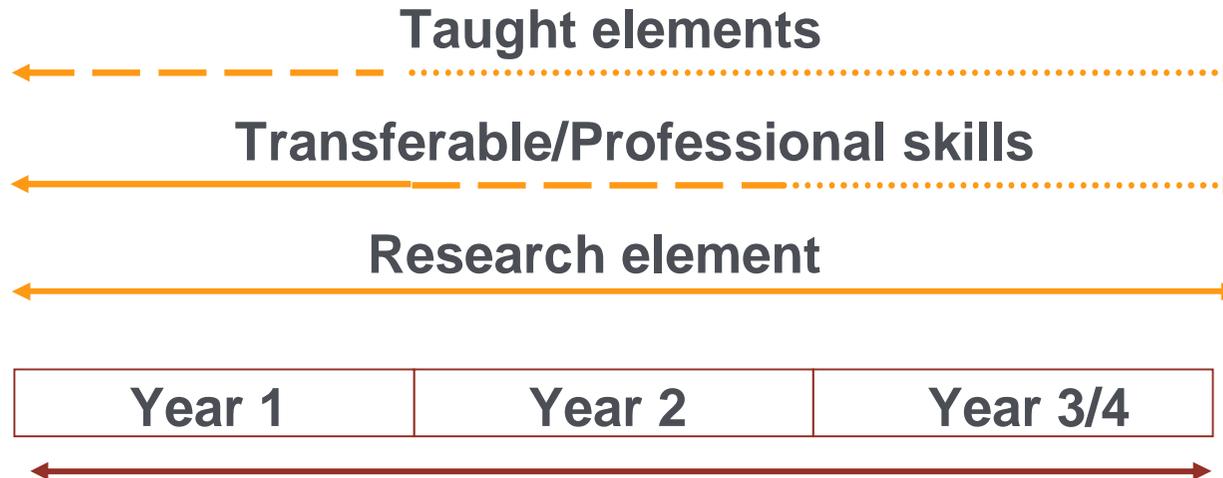
Education for working on a global stage

- Different strands in training:
 - Major focus - academic training
 - Skills for employability
 - » Match to employers' needs
 - Transferable/generic skills
 - Global skills – skills for working on a global stage



Doctoral (3rd cycle) training

- Evolution from a research apprenticeship to a
- multi-stranded education
- 3-4 years



Doctoral (Graduate) School Dimension

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Bologna and doctoral training (3rd cycle)

London Communiqué

- “..value of developing and maintaining a wide variety of doctoral programmes linked to the overarching framework of the qualification framework of the EHEA, whilst avoiding overregulation”
- “..embed doctoral programmes in institutional policies and strategies..”
- “Crucial issues such as.. supervision and assessment procedures, the development of transferable skills and ways of enhancing employability”
- Mobility
- 1st → 2nd → 3rd cycle sequence, but flexibility of access

Doctoral (Graduate) School Dimension

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Range of issues and responsibilities



University structures for delivering doctoral training: Doctoral (Graduate) Schools

2 different major structures

- Overarching, interdisciplinary
 - One or small number per university
 - normally in a single university
- Specialist subject-focussed
 - Several within one university
 - may involve 1 or more universities (depending upon size of the universities)
- Some universities have both
- Functions are consistent, but nomenclature varies!
 - Graduate Schools, Doctoral Schools, Graduate Academy



Doctoral (Graduate) School structures and functions

Activity	Overarching	Subject-focussed
Quality	✓	✓
Integrated voice	✓	(✓)
Interdisciplinarity	✓	x
Transferable skills	✓	(✓)
Subject-specific training	x	✓

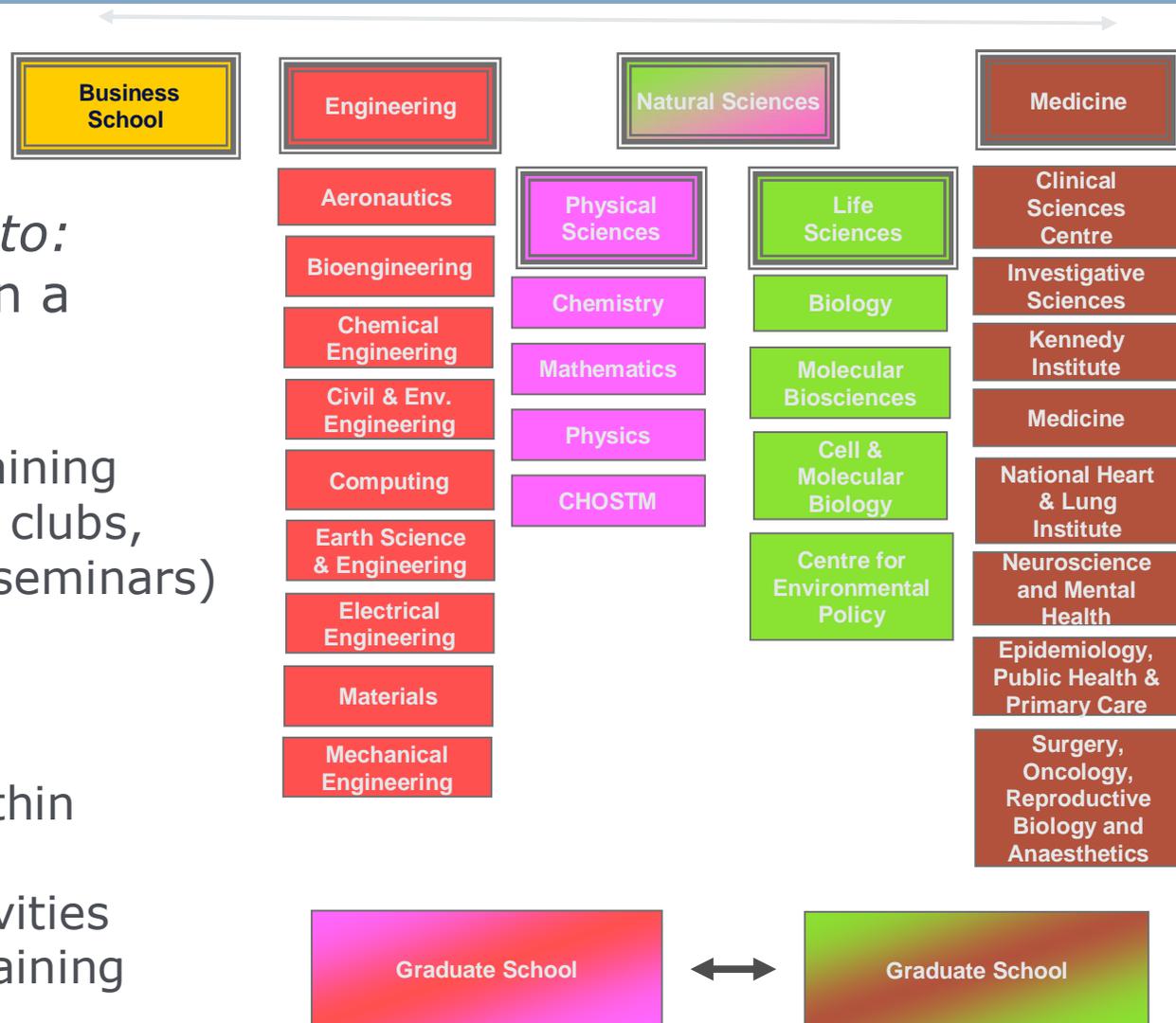
Our Graduate Schools at Imperial

All students belong to:
A Department within a Faculty

- Research
- Specific academic training (e.g. lectures, journal clubs, internal and external seminars)

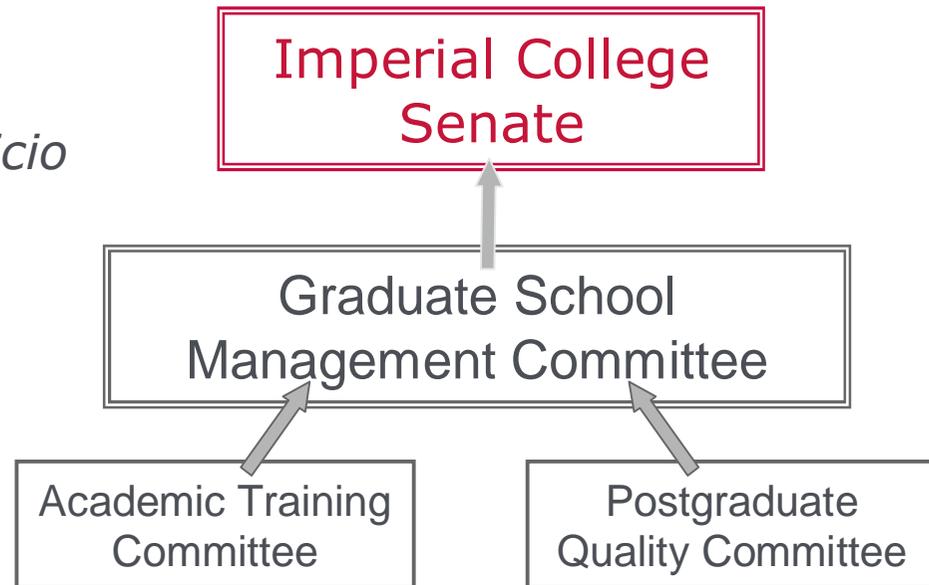
A Graduate School

- Quality Assurance
- Integrated 'voice' within College
- Interdisciplinary activities
- Transferable skills training



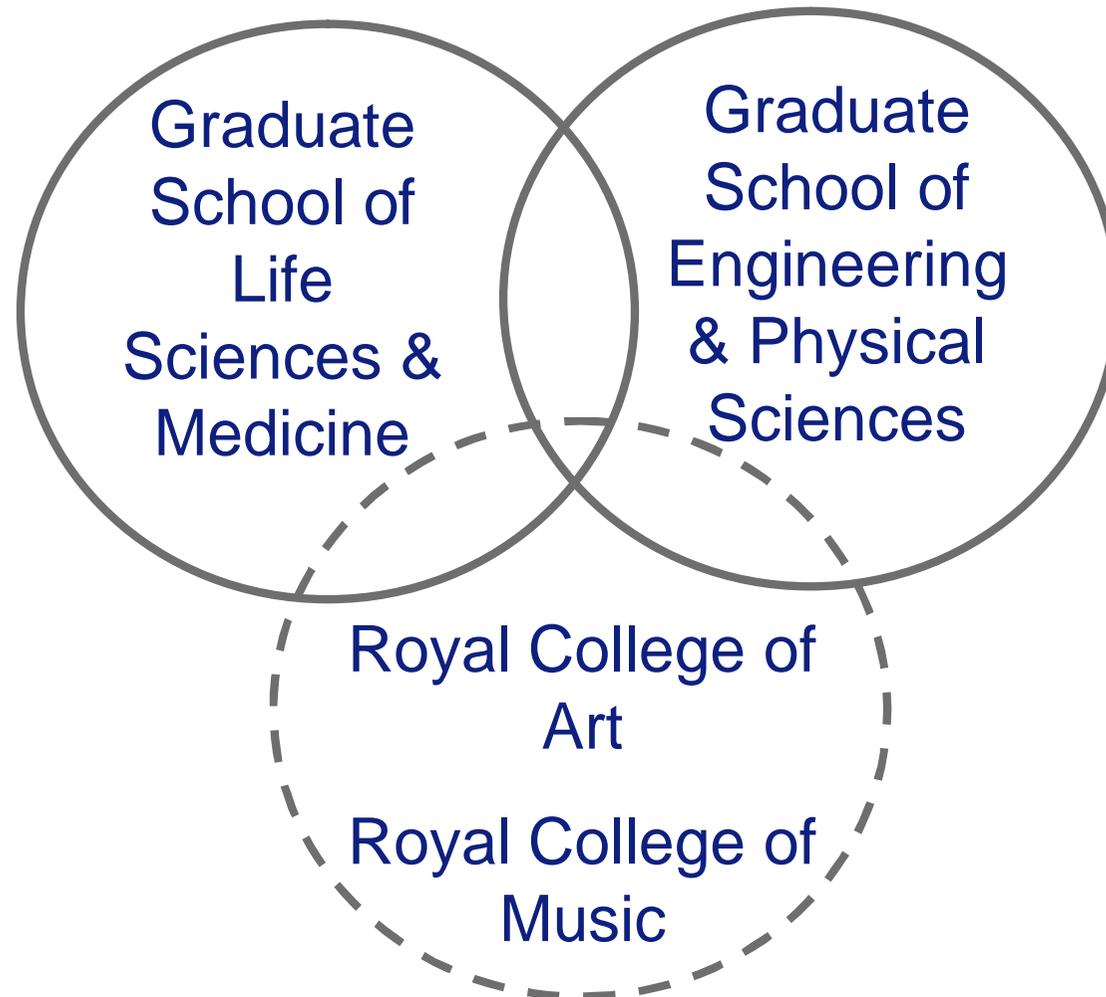
Our Graduate Schools: embedded in the university structure

- Directors of Graduate Schools have 'Head of Department' equivalent status and are *ex officio* members of senior strategic university decision-making committees.
- Student representation on all Graduate School committees



- Integration in institution structure – 'muscle'
- Quality assurance
- Transferable skills
- Interdisciplinary environment

Enhancing interdisciplinarity

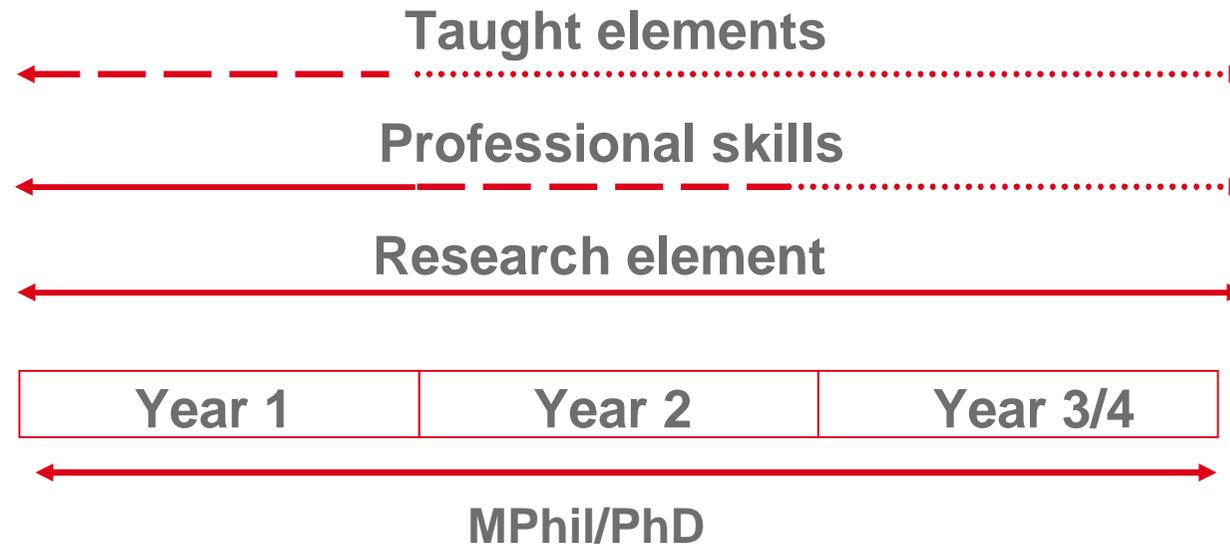


Transferable skills



Elements of PhD training

Evolution from a research apprenticeship
to a
multi-stranded education
3-4 years



Taught elements = selected lectures, seminars

Professional elements = transferable skills development and training

Research element = PhD research project

‘Roberts’ Review: SET for success (2002)

- A review, chaired by Sir Gareth Roberts, into the supply of science and engineering skills in the UK
- Review was commissioned as part of the UK Government's productivity and innovation strategy

“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”*

Roberts' Recommendation 4.2

Recommendation 4.2: PhD training elements

Despite the welcome current moves by the Funding Councils to improve the quality of PhD training, institutions are not adapting quickly enough to the needs of industry or the expectations of potential students. The Review therefore believes that the training elements of a PhD – particularly training in transferable skills – need to be strengthened considerably. In particular, the Review recommends that HEFCE and the Research Councils, as major funders of PhD students, should make all funding related to PhD students conditional on students' training meeting stringent minimum standards. These minimum standards should include the provision of at least two weeks' dedicated training a year, principally in transferable skills, for which additional funding should be provided and over which the student should be given some control. There should be no requirement on the student to choose training at their host institution. The minimum standards should also include the requirement that HEIs – and other organisations in which PhD students work – reward good supervision of PhD students, and ensure that these principles are reflected in their human resources strategies and staff appraisal processes.

Furthermore, in order to assure employers of the quality of graduates, as part of these standards the Review recommends that institutions should review or tighten their procedures for the transfer of students to the PhD. In particular, the Review believes that HEIs must encourage PhD projects that test or develop the creative skills of employers.

...the training elements of a PhD – particularly training in transferable skills – need to be strengthened considerably.

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Transferable skills training – UK Research Councils' Joint Skills Statement

Research skills and techniques

Research environment

Research management

Personal effectiveness

Communications skills

Networking and team-working

Career management



The range of skills

Research skills and techniques

Research environment

- Ethical issues - peer review, pressure for results, conflicts of interest, secrecy, obligation to the public
- Commercialisation

Research management

- Time management, prioritisation, realism
- Project management, milestones etc
- Data management, IT skills



The range of skills

Personal effectiveness

- Self-discipline, motivation, initiative
- Awareness of self limitations, training needs

Communication skills

- Writing
- Oral presentations: brief, long
- Professional audiences, public understanding
- Teaching, media



The range of skills

Networking and teamworking

- Within research group, institution, wider research community
- Understand behaviour, impact on others

Career management

- Ownership, realistic goals, identify development needs
- Insight into transferable nature of research skills, range of career opportunities within/outside academia
- Effective presentation - CVs, applications, interviews



Additional key skills

Skills to operate in an intercultural,
global context

Skills to operate in an entrepreneurial
commercial/industrial context

Outreach; the next generation;
sustainability

Not just about gaining new skills

*Recognition of skills that you already
have*



Training in transferable skills: e.g of >45 workshops

Science, research and integrity

Time management and personal effectiveness

Communication and presentation skills

Networking; Negotiation skills

Teamwork

Writing skills

Science and the media

Intellectual property

Commercialisation of research

Thesis writing and completing the PhD

Career planning



Residential 3-day workshop for students in their 1st year

Easthampstead Park, Berkshire

- Space for team activities and informal interaction
- Distance from their lab/department!
- Designed for students early in their research careers, with long term career effectiveness
- Experiential learning
- Ethos: enhancing personal and research skills



Day 1: Research Skills

Planning and Project Management

- The framework MPhil → PhD

Individual Research Degree Planning

- Gant and network charts

Creativity

- Attitude and skills

Resources

- Technical, analytical, social



Day 2: Self Awareness and Relationships

Day 3: Succeeding in Research

Day 2:

- Group Dynamics
- Introduction to Myers Briggs
- Conflict and Collaboration
- Course Dinner

Day 3:

Research Collaboration

Research Challenges

- Student – supervisor relationship
- PhD planning
- Motivation
- Networking
- Stress management



Residential workshop: intercultural and global skills

- Collaborative ‘intercultural’ residential workshops with:
 - **IDEA League in Europe**
 - » Imperial College London, UK
 - » TU Delft, The Netherlands
 - » ETH Zurich, Switzerland
 - » RWTH Aachen, Germany
 - » ParisTech, France
 - **Colleagues in Singapore**
 - » Nanyang Technical University
 - » National University of Singapore
 - » A*STAR Research Institutes

Are we doing the right thing? Are our programmes effective?

- Good at defining the skills, but is the training useful and effective?
- An important area of research in itself
- Another 'added-value' role for the Graduate Schools
- Academic staff specialising in transferable skills



Is the transferable skills training effective?

Funders need to know that their money is well spent

How to assess?

- Short-term metrics – easy
 - E.g. Student satisfaction, supervisor satisfaction
- Medium-term metrics
 - employer satisfaction, graduate satisfaction
- Long-term metrics – very difficult
 - E.g. effect on national or European economy
 - Too many input factors
- Case studies
- **Research**

Research – SKIPI analysis

- Focus of this research/analysis was student confidence and beliefs
- SKIPI: a Skills Perception Inventory for Evaluating Postgraduate Transferable Skills Development
- Significant improvement in all 4 domains, when pre- and post course data compared
 - group work, communication, project management, personal awareness
- Maintained at 5 weeks
- Similar improvement in perceived value of skills training



Esat Alpay and Elaine Walsh. "A Skills Perception Inventory for Evaluating Postgraduate Transferable Skills Development", Assessment and Evaluation in Higher Education (2007).

SKIPI – some results so far

Current research:

- Gender differences seen in perceptions on ‘group work’ and ‘communication’ pre-course but post-course differences not significant
- Subject area differences
- Country of residence
- The project itself has raised student awareness of the skills that they already have and those that they need to develop

Future studies:

- Analyse longitudinal study – to determine long-term efficacy
- Extend the research to other areas of skills training
- Collaborate and compare data with colleagues from other universities

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The value of Doctoral Schools

- Bring doctoral students and their studies into key position in the university (top management)
- Enable better link with research strategy and focus on research strengths
- Provide cohesive consistent approach
- Can facilitate interdisciplinary activities
- Co-ordinate student input and involvement
- Enhance quality and effectiveness of research training
- **Enhance/optimize development and delivery of transferable skills programme**
- Economy of scale with added value



Sharing our Doctoral School experience: EUA-CDE

- A pan-European network
- European Universities Association – Council for Doctoral Education (EUA-CDE)
 - Launched June 2008
 - Membership - universities from across Europe
 - Supporting doctoral training across Europe
 - Sharing ideas and good practice
 - Annual conference
 - Themed workshops (e.g. supervisor training)
 - Database on doctoral education
 - ‘Hotline’ e-mail based forum

Cross-cutting link between EHEA and ERA/ERC



Doctoral Schools, Bologna and the 3rd cycle

- Excellent structure for delivering transferable skills
- Can accommodate Bologna 2010, 2020 and beyond
- A rapidly evolving area so always plenty more to do!

BUT

- Transferable skills – very important, but only a small % of doctoral training
- Optional or mandatory; if mandatory, minimum attendance? credits?
- The danger of ECTS for the doctoral cycle
- Slippery slope to credits for everything in the doctorate (PhD) e.g.
 - Skills, course work, each publication, the research project itself....
 - Will drive and distort behaviour
- *The PhD is a training in research by research*
 - *We must not stifle originality and creativity*

The value of Doctoral Schools

“the product that the PhD researcher creates is not the thesis – vital though that is to their subject area through the creation of original knowledge – no, the product of their study is the development of themselves”

Sir Gareth Roberts

Thank you

