TRANSFERABLE SKILLS TRAINING FOR RESEARCHERS - SUPPORTING CAREER DEVELOPMENT

World Science Forum, 24-27 November 2013, Rio
Graduation rates at doctoral level 2000 and 2011 (as % of total population)

PhD graduate rates are increasing ….

Above: Percentage of doctoral graduates in 2011 that were women

Right axis: doctoral graduates as percentage of the total population

Doctorate holders working as researchers 2009

As a % of employed doctorate holders

% Researchers  Unspecified  Share among women


.... with most PhDs working as researchers ......

Recent PhDs only – previous 3 years
Doctorate holders by employment sector 2009

As a % of employed doctorate holders

… in both the public and private sectors.

Researchers and doctorate holders require a variety of skills

“Transferable skills” - skills learned in one context (e.g. research) that can be useful in another (e.g. future employment in research, business, etc.). They apply in a broad variety of work situations and sectors.

Examples of transferable skills:

- Communication
- Problem-solving
- Team-working and networking
- Business and management know-how

Formal “transferable skills” training is one way to achieve these competencies.

While researchers acquire some key skills in the course of their studies/work, others may require more systematic and quality-consistent training.

So we looked at this via an OECD study on policies and practices in:

- National governments
- National government ministries
- Regional/state-level governments
- Universities
- University departments/faculties
- Research institutions
- Other organisations

What do we mean by “transferable skills”? – broad typology

<table>
<thead>
<tr>
<th>Transferable skill category</th>
<th>Skills included:</th>
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<tbody>
<tr>
<td>Interpersonal skills</td>
<td>* Working with others/teamwork</td>
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<td>* Mentoring and supervisory skills</td>
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<td>* Negotiating skills</td>
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<td>* Networking skills</td>
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<td>Organisational skills</td>
<td>* Project and time-management skills</td>
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<td>* Career planning skills</td>
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<td>Research competencies</td>
<td>* Grant application writing skills</td>
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<td></td>
<td>* Research management and leadership</td>
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<td></td>
<td>* Knowledge of research methods and technologies beyond the PhD project</td>
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<td>* Research ethics and integrity</td>
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<tr>
<td>Cognitive abilities</td>
<td>* Creativity and the ability for abstract thought</td>
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<td></td>
<td>* Problem solving</td>
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<td>Communication skills</td>
<td>* Communication/presentation skills, written and oral</td>
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<td></td>
<td>* Communication/dialogue with non-technical audiences (public engagement)</td>
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<td>* Teaching skills</td>
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<td>* Use of science in policy making</td>
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<td>Enterprise skills</td>
<td>* Entrepreneurship</td>
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<td></td>
<td>* Innovation</td>
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<td></td>
<td>* Commercialisation, patenting and knowledge transfer</td>
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Source: ESF (2009), grouped into categories by author.

Key Findings


www.oecd.org
Key finding 1: Most training is driven by individual institutions

• Institutions are the main actors in terms of transferable skills training, with the role of government secondary to that of universities, research institutions and other organisations

• Of those responding, 1/3 of governments have a strategy, compared to almost 2/3 of universities

Key finding 2: Main focus of transferable skills training

- Training mostly targets PhD students, post-docs and early-stage researchers not Master’s students (for which few governments, universities, research institutions have explicit strategies or programmes).

- Industrial PhDs, internships and exchanges are the most common forms of workplace experience and almost 1/3 of universities plan to expand workplace experience programmes or to make this a more systematic part of their approach.

- Respondents also noted the importance of researcher mobility and collaborative research projects in building skills.

Key finding 3: Differences across countries

• Study revealed a significant amount of transferable skills training activity, undertaken predominantly by individual institutions.

• In some countries it is relatively new (e.g. Luxembourg), while in others organised activity has taken place for some time (e.g. United Kingdom). Government involvement is high in some countries (e.g. Korea) but not in others (e.g. Germany).

• Also differences according to the context (e.g. technical universities may focus more on academic skills than transferable skills because co-operation with industry may be considered sufficient).

Key finding 4: Broad goals of transferable skills training

- Enhancing the employability of researchers in academia
- Preparing researchers for a wider labour market
- Improving research
- Also a number of additional strategic goals which sometimes overlap, e.g. teaching quality, commercialisation and knowledge transfer, international co-operation and a quality research environment

Key finding 5 (of 5): Role for government

- While institutions play the primary role in transferable skills training, governments potentially have roles ranging from strategic oversight to funding delivery.

- Most initiatives are fairly recent and the vast majority of programmes for transferable skills training have not yet been evaluated.

- Difficult to comment on their impact, e.g. the change in skill levels due to the programmes, the subsequent effects, unintended consequences, changes in behaviour etc.

Conclusion 1: Policy areas for review

- Interest in taking a more systematic approach to training and to embedding training more thoroughly in existing education and research structures

- Make funding conditional on transferable skills training, notably for funding doctoral studies – a possibility

Conclusion 2: Suggestions for policy-makers

• Investigate options for boosting the monitoring and evaluation of transferable skills training

• Explore ways to facilitate dialogue between academia and industry on training needs and opportunities

• Consider ways to encourage provision of industrial PhD options as a complement to formal training courses in universities, as well as opportunities for mobility

• Look at how general policies on collaborative research can be leveraged to support transferrable skills training opportunities for researchers at all stages of their careers

Case study 1: Nanotechnology (OECD WPN)

- To identify education policies fostering skills for nano and its convergence with other technologies; establish how these are being implemented; and identify good practice.

- 7 top-level questions to governments:
  - Are the terms ‘nano education’ and ‘nano skills’ recognised in your government/country?
  - Is there a national government strategy in your country that has a (or some) focus on nano-education and skills?
  - Within what educational tier are ‘nano education and skills’ developed in your country?
  - Does industry play a role in developing skills and education?
  - Has an assessment of need for nanotechnology education and skills been made in your country?
  - In your country, what are the challenges associated with the development of appropriate levels of nano education and skills?
  - Have you undertaken any monitoring and/or evaluation of your nanotechnology skills and education policies?

[www.oecd.org/sti/nano](http://www.oecd.org/sti/nano)
Will identify…

- Global (country-specific) approaches and strategies to the development of nanotechnology skills and education;
- The educational tier at which these are encouraged;
- Challenges faced in developing these types of skills; and
- Good practices.

OECD Working Party on Nanotechnology report end 2014

[www.oecd.org/sti/nano](http://www.oecd.org/sti/nano)
Case study 2: Biotechnology (OECD WPB)
Main areas of activity where skills are required….

……but constantly changing (e.g. synthetic biology, bioeconomy)

Biotechnology: a set of enabling technologies

Initiation ➔ Development ➔ Bulk production ➔ Product finishing

Research ➔ Development ➔ Production

Research initiation
Legislation (IP Protection)
Regulation, Scientific, Technical and Management Skills,
Commercialisation Skills, Venture Capital

Scientific, Management and General Skills,
Quality Control, Private Funding

Scientific, Management and General Skills,
Quality Control, Bulk product


www.oecd.org/sti/biotechnology