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# How Best to Develop the next Generation of PhD: Doctoral Education in an Era of Globalization



Center for Innovation  
and Research in  
Graduate Education

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# Overview



- 1. The context: globalization**
- 2. More is asked from the next generation**
- 3. Research findings motivation, outcomes – employment, competencies needed and wanted**
- 4. Conceptual approaches for the development of PhDs: it takes a “global village” – efforts of many levels of the university to develop the next generation**
- 5. A common structure**

# Globalization and the Development of Researchers



1. Globalization has brought **common trends** to doctoral education: **converging practices + stratification**
2. Due to globalization doctoral/master's education have a **dual mission**:
  - A. Build a nation's infrastructure –prepare the next generation of professional and scholars for the local and national economy inside and outside of academia
  - B. Prepare domestic and international PhD candidates for participation in a global economy and an international scholarly community.

**3. Globalization cannot be avoided but institutions of higher education can respond proactively:**

**we need to develop the next generation of researchers to be able to define and solve societal problems both at home and abroad and push the frontiers of knowledge collectively in trans- multi-interdisciplinary, and international groups**

# National Policies Respond to Globalization



- **Establishment of national governmental research training schemes, research quality frameworks**  
Australia, Brazil, EU (Denmark, Germany, Netherlands, Norway)  
Canada, Finland? Japan, Malaysia, Mexico, New Zealand, South Africa, UK, US
- **Industrial representation on national PhD program evaluation:** Denmark, Norway
- **Establishment of “sandwich doctoral programs” and exchange programs of both professors and students:** Brazil, Malaysia, Mexico, Iceland, India
- **Innovative, interdisciplinary, theme-oriented doctoral programs:** Germany, US, Australia, Netherlands

# Effects of Globalization on Doctoral Education



1. Increase in PhD production: more women, more international students, more part-time /older students – **more diverse researchers**
2. A change in the mode of research production – **mode 2 (research triangles)**
3. Increase in the importance of transferable/ professional and translational skills- **more skills**
4. Increase in standardization of doctoral education – **allows for mobility**

# Effects of Globalization on Doctoral Education



5. Quest for greater accountability- **project management skill**
6. Increased global communication and creation of global networks – **scholarly, global networks**
7. Higher education is responding to market forces faster than before –**competition**
8. Higher education has become commercial and generates revenue- the degree has become a commodity that has value beyond pure knowledge production-**competition for PhD students**

# Common Definition of a Research Doctorate

(study by CIRGE- *Forces and Forms of Change in Doctoral Education Worldwide Network*, Melbourne 2007)



- 1. Need to contribute to knowledge through original research**
- 2. Expect to have a substantial knowledge in the area of study**
- 3. Training need to include the development of professional/ transferable, translational competencies**



# What Research on Doctoral Education Can Tell Us



## Why is it important to know?

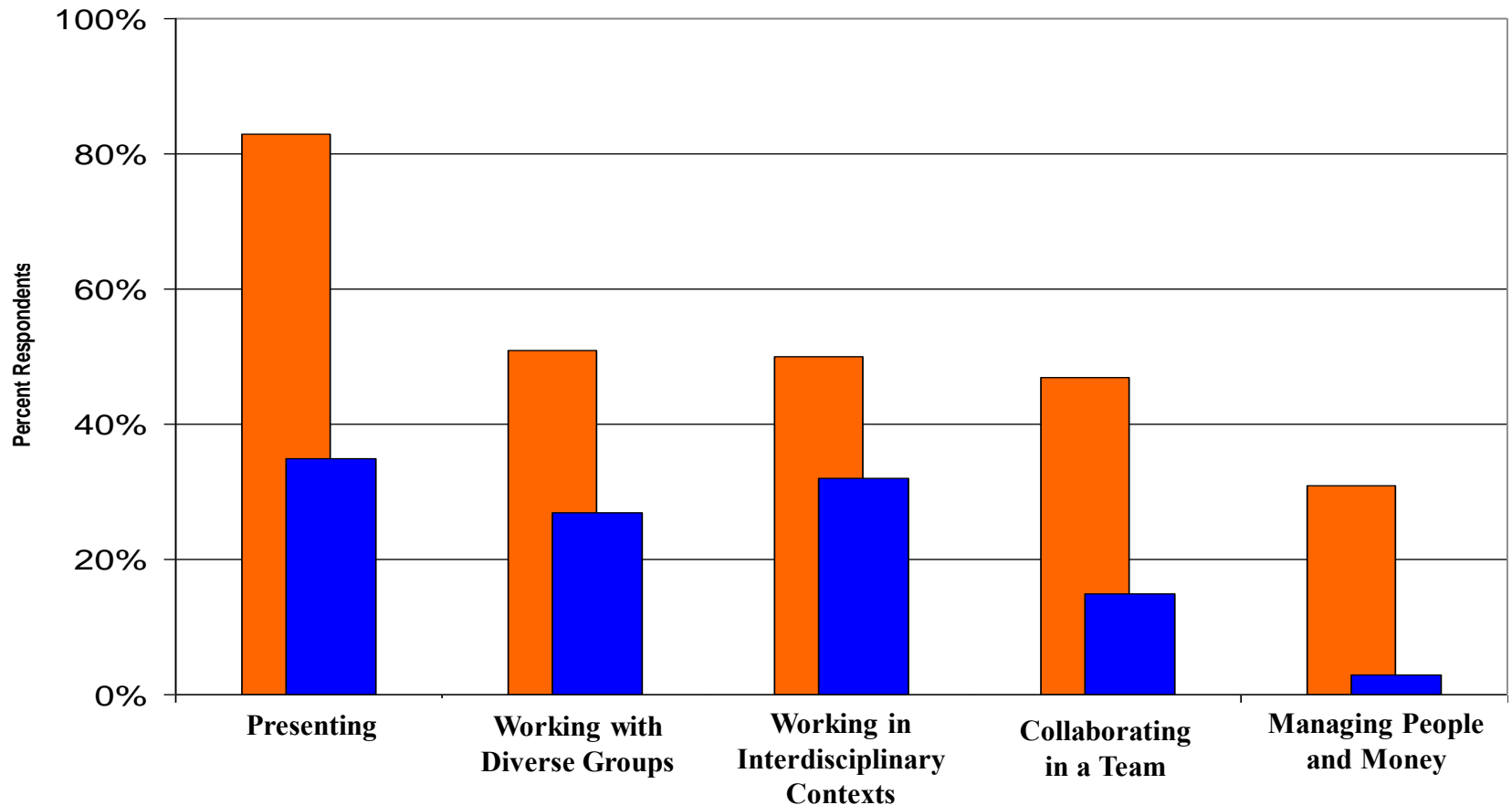
- **Motivation to acquire a PhD: not all want to become professors**
- **Different career paths + postdocs**
- **Competencies needed in current and future research jobs**

# Postdoctoral Appointments



<b>Major Field</b>	<b>%Doing Postdoc</b>	<b>Mean Years</b>
<b>Biochemistry</b>	<b>86</b>	<b>3.8</b>
<b>Computer Sc.</b>	<b>7</b>	<b>1.6</b>
<b>Elec. Eng.</b>	<b>9</b>	<b>1.6</b>
<b>English</b>	<b>8</b>	<b>2.0</b>
<b>Mathematics</b>	<b>31</b>	<b>2.5</b>
<b>Political Sc.</b>	<b>9</b>	<b>1.5</b>

# Importance of Skill at Current Job **versus** Excellent Quality of Training in this Skill During PhD Studies



Source: CIRGE, University of Washington, F+F, Penang, Malaysia, July 19-22, 2010

# More is Asked from the Next Generation of Researchers



## 1. Academic research skills

Skills developed in completing the PhD (critical thinking, research design + methods, data analysis/synthesis, writing, publishing), Working in multi-disciplinary teams

Research ethics –responsible conduct in research

## 2. Professional competencies

Team work, presenting, grant writing, managing people and budgets, Working in multi-disciplinary teams, translational competencies

## 3. Multi-cultural competencies

Working with international researchers and in international settings

# Conceptual Approaches to the Education of PhDs and Postdocs



1. Apprenticeship model- **one to one**
2. Professional socialization- **disciplinary values and norms**
3. Community of practice - **situated learning**
4. Mentoring – **a panacea for everything?**
5. It takes a global village - **a coordinated effort of many levels of the university and beyond**

# The Global Village Approach

continuing



1. Main professor/supervisor – and PhD candidate and postdoc: **apprenticeship approach** → **traditional academic research skills**, seminars, lab work, advising, from a “knowledge consumer to a knowledge producer,” from novice to junior colleague  
→→→ **IDEALLY mentoring of all competencies**
2. Department level and laboratory: **transparent disciplinary socialization and community of practice approach** → **disciplinary professional competencies** structured program and disciplinary professional development activities, social community building

# The Global Village Approach

continuing



**3. Graduate School (US type): professional socialization in multiple learning contexts +community of practice approach → professional competencies, multicultural competencies**

1. Career development (Career Center),
2. Learning of Teaching (center for Instructional Research)
3. Professional skills workshops by major fields
4. Creating and fostering postdoctoral association

**4. Beyond the university - National Research Funding Agencies: strategic funding strategies that require approaches at many levels →→→ academic + professional + international competencies)**

sponsoring innovative, interdisciplinary, international, theme-oriented doctoral programs that also include postdocs in the pedagogical design

# Research Findings - *Towards a Global PhD (2008)*

## Characteristics of Doctoral Education for the 21<sup>st</sup> Century



1. It prepares for a variety of careers (academic and **non-academic**).
2. It prepares PhDs to work in **inter-disciplinary groups** (provides general epistemology course “how do we know what we know, and what do we regard as evidence?”)
3. It integrates **professional skill building**
4. It integrates **team work**
5. It includes **international collaborations** into the doctoral program.



# Characteristics of Doctoral Education for the 21<sup>st</sup> Century



6. Research **ethics education** becomes an integral part of all education, not just science and engineering.
7. It fully integrates international doctoral candidates so that learning becomes a two-way street, where domestic candidates learn from their international peers.
8. It re-introduces **foreign language** requirements.
9. It prepares PhDs with **cosmopolitan** attitudes.

# Example of National Innovation Funding

## Strategy in Doctoral and Postdoc Education (US-IGERT Programs; German-GK)



### Characteristics of these programs

1. Theme based
2. Student funding is tied to the program NOT to the professor
3. Trans- or interdisciplinary and team-based
4. Access to professionals in the field
5. Professional skill development
6. Emphasis on the learning environment
7. Foster diversity of students
8. International component
9. Become a catalyst for change on campus

**“PhD programs that prepare students only for research and writing as lonely scholars in purely disciplinary context are providing inadequate preparation for many PhD careers.”**

**Highlight report, *Social Science PhDs – Five Years Out: A National Survey of PhDs*  
Nerad M. et al. (2008)**

# Thank you!



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## CIRGE website

<http://www.cirge.washington.edu>