

Prof. Dr. Barbara M. Kehm
International Centre for Higher Education Research
(INCHER-Kassel)
University of Kassel
Moenchebergstr. 17
34109 Kassel, Germany

Tel. +49 – 561 – 804 2415
Fax +49 – 561 – 804 7415
Email: kehm@incher.uni-kassel.de

Current Trends in Doctoral Education in Germany

Input Workshop 4 “International Experiences of Training Programmes” at the International Forum on Research and the University, 2 – 3 June 209 in Bogotá, Colombia.

1. Introduction: The German Tradition

The traditional form of getting a PhD in Germany was very much individualised, i.e. potential candidates had to be accepted with their theme by a professor (doctor father or mother) who then took over supervision. This model is called the “master – apprentice” model. Funding was either secured on the basis of a position of research assistant within the professor’s chair or institute, a scholarship or self-financed. Getting a PhD neither required any tuition fees nor were there any study or training programmes. Typically professors organised something like a research colloquium once a month in which his or her PhD candidates presented the progress of their work which then was discussed by the group. PhD candidates were also not considered as students. Instead, their status was akin to an early stage researcher with or without funding or a job within the university. Prerequisites to become a doctoral candidate were, apart from the acceptance by a professor, a Master level degree with an above average grade. The supervisor also acted as the first reviewer of the thesis and the first examiner of the defence. No registration as doctoral student at a given university took place. Doctoral candidates were (and still are) either employed as research assistants (the biggest group comprising about 57 to 58 percent of all doctoral candidates in Germany) working for the supervisor and it was the supervisor’s responsibility to provide opportunity for work on the thesis. If the thesis was not submitted after six years the contract could not be renewed; or the doctoral candidate had a scholarship (from funding organisations, private foundations, state ministries, and, to some extent, the universities themselves) and then was working at home or in the library, occasionally seeking advice from the supervisor and getting invitations to the research colloquiums (the second biggest group comprising about 22 percent of all doctoral candidates). If the thesis was not submitted once the scholarship ended (usually after three to four years), the candidate had to look for a job and try to finish the thesis. The third group – typically the one with the highest proportion of drop-out – were those doctoral candidates working in professional jobs outside the university and tackling the thesis project in their spare time (about 20 percent of all doctoral candidates).

This highly problematic system led to a high proportion of candidates giving up the plan of getting a PhD at one point or another but since no registration of any kind took place, drop-out quotas were unknown, however they were estimated to be rather high, i.e. up to 60 percent in some subjects. Burkhardt (2008, p. 180) estimates the number of doctoral candidates being in the process of getting the degree in 2005/06 as being between 53,100 and 63,300. Clearly less than half of them will eventually finish their degree successfully.

Despite this, Germany has always had had a very high proportion of PhD output. Around 10 percent of university graduates with the equivalent of a Master's degree are eventually awarded a PhD. This quota is lower than it is in Switzerland but higher than it is in the USA.

In the early 1990s criticism about the sorry state of doctoral training in Germany became louder. Three issues stood in the forefront of the critique: too narrow training with low relevance for non-academic labour markets, the duration of getting a PhD was too long, the quality of supervision was questioned.

Before I present the recent reform agenda with regard to doctoral education and training in Germany and then come to some conclusions, I'd like to provide you with a few statistical overviews.

2. Some Statistics

In 2005 altogether 25,952 doctoral degrees were awarded in Germany. Among these 10,272 (39.6%) were awarded to women and 15,680 (60.4%) to men. Among the doctorates awarded 86.3 percent went to domestic (German) candidates and 13.7 percent to international candidates.

Subject groupings and distribution of doctoral degrees awarded according to male/female and domestic/ international were as follows in the year 2005:

Table 1: Percent of doctoral degrees awarded in Germany in 2005 according to subject, gender and domestic/international candidates.

	Percent females	Percent males	Percent domestic	Percent international
Languages, Humanities, Sports	48.5	51.5	84.0	16.0
Law, Economics, Social Sciences	31.2	68.8	91.2	8.8
Mathematics, Natural Sciences	33.3	66.7	77.9	22.1
Human Medicine, Health Sciences	49.3	50.7	94.3	5.7
Veterinary Medicine	74.2	25.8	92.2	7.8
Agriculture, Forestry, Food	39.1	60.9	65.4	34.6

Sciences				
Engineering Sciences	13.6	86.4	81.4	18.6
Arts, Art Studies	39.6	60.4	90.9	9.1

Despite various efforts over the years to reduce the duration of getting a doctoral degree, the average age upon completion continued to rise almost steadily. In 2005 the average age at successful completion of a doctorate was 33.0 years. Here is an overview of the average age upon completion in the various subject groupings in 2005.

Table 2: Average age at award of doctoral degree according to subject group

	Average age
Languages, Humanities, Sports	36.2
Law, Economics, Social Sciences	32.9
Mathematics, Natural Sciences	32.1
Human Medicine, Health Sciences	32.2
Veterinary Medicine	31.6
Agriculture, Forestry, Food Sciences	34.3
Engineering Sciences	34.1
Arts, Art Studies	37.5

3. Structured PhD Programmes

Already in the early 1990s the German Science Council, an influential policy advisory body in Germany, had made recommendations to establish structured PhD programmes. This was thought to be the solution to a number of problems:

- The establishment of structured programmes with taught elements would reduce the duration of this phase of qualification and provide opportunities that doctoral candidates would learn from each other;
- Supervision could be shared among those professors becoming involved in these programmes so that the relationship of dependency and possibly exploitation was mitigated;
- Structured programmes could also be interdisciplinary or transdisciplinary providing opportunities to integrate labour market relevant key skills and competences.

The German Research Council (DFG) was the first to establish such programmes calls graduate colleges (today there are about 285 of these). Research groups or departments had to submit a concept and an application for funding. Both went through a rigorous review process. The winners received funding for a fixed number of years and then were evaluated. Funding was made available for coordination and administration as well as for a number of scholarships. Potential doctoral students had to apply and were selected for the scholarships. Typically each of these PhD programmes also included some doctoral candidates who did not receive a scholarship. The programme consisted of lectures, seminars, colloquiums and events and discussions organised by the doctoral candidates themselves. Often the funding

also included some money to invite guest lectures. The model was rather elitist (due to research council funding). Soon one of the biggest and most renowned extra university research societies, the Max Planck Society, started to establish so-called Max Planck Research Schools to integrate their doctoral students and give them a more structured programme. Scholarships were not really necessary here because the doctoral candidates had research assistant positions in the framework of research projects carried out in the Max Planck Institutes to which they were affiliated. The German Academic Exchange Service then set up and funded 50 international doctoral programmes.

Within the framework of the Bologna Reform Process and its project to introduce a tiered structure of studies according to the Bachelor and Master model, the decision was taken in 2003 (Berlin meeting of Ministers) to establish doctoral studies as the third cycle of studies. This idea met with massive resistance in Germany because doctoral candidates were not considered to be students, there were no tuition fees, and even the doctoral programmes which had been established until that point in time considered their taught elements rather an element of systematic research training than studies.

However, the Bologna process contributed to the fact that the idea of structured programmes for doctoral education and training finally took hold and became accepted on a larger scale. Since then university management of practically all universities in Germany has encouraged their faculties and departments to establish doctoral programmes to provide more systematic training and increase the output of doctoral degrees. The individual master-apprentice model currently continues to exist parallel to the new trends towards structured programmes, centres and schools. The number of these structured provisions is unknown (as yet) but they take many forms and shapes and are funded in various ways. An attempt at classification looks as follows:

- Externally funded doctoral schools or programmes with some organisational and administrative resources and a fixed number of scholarships; either discipline oriented or thematically oriented.
- Doctoral schools supported financially in the framework of the German “Excellence Initiative” (generous Federal Government funding for 5 years) organised as structured disciplinary or interdisciplinary schools or centres or organised according to the American model, i.e. an administrative unit supporting structured doctoral training for the whole institution.
- Disciplinary or interdisciplinary doctoral programmes or centres without external funding but with some resources for administrative and organisational tasks as well as office space or work places for the doctoral candidates provided by the university. Doctoral candidates are either on research assistant positions or have a scholarship.

4. Conclusions

All German universities are considered to be research universities and all can award doctoral degrees, in fact currently still every university professor has the right – as part of his or her academic freedom – to accept doctoral candidates. Usually a professorial chair is endowed with one or two positions for research assistants which are typically young researchers who are in the process of getting their doctoral degrees. Also applications for externally funded research projects normally include one or two positions for research assistants who are then responsible to carry out a large part of the actual research work, apart from trying to write their PhD thesis.

Such contracts are always 50 percent of the regular working time and can be continued and/or renewed for up to six years. After that it is “up or out”. However, despite the fact that there is a broad consensus in Germany that there should be many pathways to the doctorate, the trend shows that structured PhD programmes, concerns about quality and efficiency, and increasing competition point into a different direction. Individual research work on a thesis under the supervision of a doctor father or mother will most probably become a model of the past eventually. Concentration of research in centres of excellence and externally funded graduate schools or programmes with joint supervision, critical mass, and the requirement that professors go through extra training in order to be allowed to become PhD supervisors are currently under debate. The models of these programmes, schools and centres might vary, as will their concepts, structures, and funding but the trend towards more systematic research training becomes visible. The main arguments for these changes have been improved competitiveness on an international scale by creating more attractive opportunities for international doctoral candidates as well as more relevance of research training for the knowledge intensive sectors of the economy in emerging knowledge societies. However, a new study on doctoral programmes funded by the German Research Council has shown that neither the duration of getting the degree could be substantially reduced nor are the grades substantially better of those doctoral degree holders who have been trained in the framework of these programmes (cf. Enders, Kottmann 2009). Thus it remains to be seen whether structured PhD training can really be a solution to all the known problems.

Literature (including further reading)

- Bartelse, Jeroen (1999): Concentrating the Minds. The Institutionalisation of the Graduate School Innovation in Dutch and German Higher Education. Enschede: CHEPS and Utrecht: Lemma
- Berlin Communiqué (2003): http://www.aic.lv/ace/ace_disk/Bologna/maindoc (accessed 7 October 2005)
- Berning, Ewald, Falk, Susanne (2005): "Das Promotionswesen im Umbruch". In: Beiträge zur Hochschulforschung, Vol. 27, No. 1, pp. 48-72
- Bologna Declaration (1999): http://www.aic.lv/ace/ace_disk/Bologna/maindoc (accessed 7 October 2005)
- Bourner, Tim, Bowden, Rachel, Laing, Stuart (2000): "Professional Doctorates: The Development of Researching Professionals." In: Bourner, T., Katz, D. Watson (eds.): New Directions in Professional Higher Education. Buckingham: SRHE and Open University Press, pp. 214-225
- Bourner, Tim, Bowden, Rachel, Laing, Stuart (2001): "Professional Doctorates in England". In: Studies in Higher Education, Vol. 26, No. 1, p. 65-83
- Burkhardt, Anke (ed.) (2008): Wagnis Wissenschaft. Akademische Karrierewege und das Fördersystem in Deutschland. Leipzig: Akademische Verlagsanstalt.
- Busquin, Philippe (2000): Presidency Conclusions of the Lisbon Summit. URL: http://www.bologna-berlin2003.de/pdf/PRESIDENCY_CONCLUSIONS_Lissabon.pdf (accessed 16 June 2007)
- CIRGE (2005): <http://www.depts.washington.edu/cirgecon>
- Council of Graduate Schools (2006): "A Transatlantic Dialogue on Doctoral Education." In: Communicator, Vol. 9. No. 8, October, p. 1-2 and 5. URL: http://www.cgsnet.org/portals/0/pdf/comm_2006_10.pdf (accessed 14 June 2007)
- De Weert, Egbert (2004): „The Netherlands“. In: Sadlak, Jan (ed.) (2004): Doctoral Studies and Qualifications in Europe and the United States: Status and Prospects. Bucarest: UNESCO-CEPES, pp. 77-97
- Dill, David D., Soo, Maarja (2005): „Academic quality, league tables, and public policy: A cross-national analysis of university ranking systems.“ In: Higher Education, Vol. 49, pp. 495-533
- Enders, Jürgen, Bornmann, Lutz (2001): Karriere mit Dokortitel? Ausbildung, Berufsverlauf und Berufserfolg von Promovierten. Frankfurt/M., New York: Campus
- Enders, Jürgen (2005a): "Brauchen die Universitäten in Deutschland ein neues Paradigma der Nachwuchsausbildung?" In: Beiträge zur Hochschulforschung, Vol. 27, No. 1, pp. 34-47
- Enders, Jürgen (2005b): „Wissenschaftlicher Nachwuchs in Europa.“ In: 50. Beiheft der Zeitschrift für Pädagogik. Weinheim, Basel: Beltz, pp. 158-169
- Enders, Jürgen, Kottmann, Andrea (2009): Neue Ausbildungsformen – andere Werdegänge? Weinheim: Wiley-VCH
- EQF (2008): The European Qualifications Framework. URL: http://ec.europa.eu/education/policies/educ/eqf/index_en.html (retrieved 5 April 2008)
- EUA (2005): Doctoral Programmes for the European Knowledge Society. Brussels. URL: http://www.eua.be/eua/jsp/en/upload/Doctoral_Programmes_Project_Report.1129278878120.pdf (accessed: 1 November 2005)

- EUA (2007): Call for Case Studies for DOC-CAREERS Project. URL: http://www.eua.be/index.php?id=48&no_cache=1&tx_ttnews%5Btt_news%5D=335&tx_ttnews%5BbackPid%5D=1 (accessed 16 June 2007)
- EUA Newsletter 2/2008 from 28 January: EUA launches new membership service: Council for Doctoral Education. URL: <http://www.eau.be/index.php?id=604> (retrieved 9 March 2008)
- European Commission (2003a): Communication from the Commission: The role of universities in the Europe of knowledge. Brussels (COM(2003) 58 final)
- European Commission (2003b): Communication for the Commission to the Council and the European Parliament: Researchers in the European Research Area: One profession, multiple careers. Brussels (COM(2003) 436 final)
- Golde, Chris M., Walker, George E. (eds.) (2006): *Envisioning the Future of Doctoral Education. Preparing Stewards of the Discipline. Carnegie Essays on the Doctorate*. San Francisco: Jossey-Bass
- Green, Howard, Powell, Stuart (2005): *Doctoral Education in Contemporary Higher Education*. Maidenhead, New York: Society for Research into Higher Education and Open University Press
- Guth, Jessica (2006): "The Bologna Process: The Impact of Higher Education Reform on the Structure and Organisation of Doctoral Programmes in Germany". In: *Higher Education in Europe*, Vol. 31, No. 3, p. 327-338
- Hüfner, Klaus (2004): "Doctoral Degrees in Germany." In: Sadlak, Jan (ed.): *Doctoral Studies and Qualifications in Europe and the United States: Status and Prospects*. Bucarest: UNESCO-CEPES, pp. 51-61
- Johnston, Bill, Murray, Rowena (2004): "New Routes to the PhD: Cause for Concern?" In: *Higher Education Quarterly*, Vol. 58, No. 1, p. 31-42
- Kehm, Barbara M. (1999): *Higher Education in Germany. Developments, Problems and Perspectives*. Bucarest: UNESCO CEPES and Wittenberg: Institute for Higher Education Research
- Kehm, Barbara M. (2004): „Developing Doctoral Degrees and Qualifications in Europe. Good Practice and Issues of Concern.“ In: Sadlak, Jan (ed.): *Doctoral Studies and Qualifications in Europe and the United States: Status and Prospects*. Bucarest: UNESCO-CEPES, pp. 279-298
- Kehm, Barbara M. (2005): „Promovieren in Europa: Strukturen und Konzepte im Vergleich“. In: *Hochschule Innovativ*, No. 14, pp. 2-3
- Kehm, Barbara M. (2006): *Doctoral Education in Europe and North America. A Comparative Analysis*. In: Teichler, Ulrich (ed.): *The Formative Years of Scholars*. Wenner-Gren International Series Vol. 83. London: Portland Press
- Kehm, Barbara M. (2007): *Quo Vadis Doctoral Education? New European Approaches in the Context of Global Changes*“. Manuskript eines Vortrag auf der RIF-EDSE Konferenz "Le doctora(n)t en sciences de l'éducation: enjeux, défis, perspectives". Universität Genf, 8./9. Juni
- Kehm, Barbara M. (2008): "Germany". In: Nerad, Maresi, Heggelund, Mimi (eds.): *Toward a Global PhD? Forces & Forms in Doctoral Education Worldwide*. Seattle and London: University of Washington Press, pp. 19-35
- Kivinen, Osmo, Ahola, Sakari, Kaipainen, Päivi (eds.) (1999): *Towards the European Model of Postgraduate Training. Research Report 50*. Turku: University of Turku, Research Unit for the Sociology of Education (RUSE)
- Kupfer, Antonia (2007): *DoktorandInnen in den USA. Eine Analyse vor dem Hintergrund des Bologna-Prozesses*. Wiesbaden: Deutscher Universitäts-Verlag

- Kupfer, Antonia, Moes, Johannes (2003): Promovieren in Europa. Ein internationaler Vergleich von Promotionsbedingungen. Frankfurt/M: GEW and Hans Böckler Stiftung
- Kwiek, Marek (2004): „Poland“. In: Sadlak, Jan (ed.): Doctoral Studies and Qualifications in Europe and the United States: Status and Prospects. Bucarest: UNESCO-CEPES. S. 119-133
- Lemerle, Jean (2004): „France“. In: Sadlak, Jan (ed.): Doctoral Studies and Qualifications in Europe and the United States: Status and Prospects. Bucarest: UNESCO-CEPES. S. 37-50
- LERU (2007): LERU Statement on Doctoral Training and the Bologna Process. URL: http://www.leru_statement_on_doctoral_training_february_2007.pdf (accessed: 17 June 2007)
- Lisbon Summit (2000): http://www.bologna-berlin2003.de/pdf/PRESIDENCY_CONCLUSIONS_Lissabon.pdf (accessed 17 June 2007)
- London Communiqué (2007): “Towards the European Higher Education Area: responding to challenges in a globalised world.” 18 May. URL: <http://www.dfes.gov.uk/bologna/uploads/documents/LondonCommuniquefinalwithLondonlogo.pdf> (accessed: 17 June 2007)
- Mähler, Helena (2004): “Sweden”. In: Sadlak, Jan (ed.): Doctoral Studies and Qualifications in Europe and the United States: Status and Prospects. Bucarest: UNESCO-CEPES. S. 201-230
- Maki, Peggy L., Borkowski, Nancy A. (eds) (2006): The Assessment of Doctoral Education. Emerging Criteria and New Models for Improving Outcomes. Stirling, Virginia: Stylus
- Manifesto (2006): “Manifesto of European Doctoral Students in Literature and the Humanities.” URL: <http://www.univ-bpclermont.fr/IMG/pdf/manifeste-doctorant.pdf> (accessed: 17 June 2007)
- McCarty, Luise P., Orloff, Debora H. (2005): “Reforming the Doctorate in Education: Three Conceptions.” In: Educational Perspectives, Vol. 37, Issue 2, S. 10-19
- Mitchell-Kernan, Claudia (2005): “Doctoral Education: Reform on a Weakened Foundation.” In: Communicator, Vol. 38, No. 10, December. URL: <http://www.cgsnet.org/portals/0/pdf/Mitchell%20Kernan%20article.pdf> (accessed 16 July 2007)
- Moscato, Roberto (2004): “Italy”. In: Sadlak, Jan (ed.): Doctoral Studies and Qualifications in Europe and the United States: Status and Prospects. Bucarest: UNESCO-CEPES. S. 63-76
- National Science Foundation (ed.) (2000): Graduate Education Reform in Europe, Asia and the Americas and International Mobility of Scientists and Engineers. URL: <http://www.nsf.gov/statistics/nsf00318/pdf/c2.pdf> (accessed 15 June 2007)
- Neave, Guy, Blücker, Kjell, Nybom, Thorsten (eds.) (2006): The European Research University. An Historical Parenthesis? New York, Basingstoke: Palgrave Macmillan
- Nerad, Maresi (2004): “The PhD in the US: Criticism, Facts, and Remedies.” In: Higher Education Policy, Vol. 17, No. 2, pp. 183-199
- Nerad, Maresi (2008): United States of America”. In: Nerad, Maresi, Heggelund, Mimi (eds.): Toward a Global PhD? Forces & Forms in Doctoral Education Worldwide. Seattle and London: University of Washington Press, pp. 278-299
- Nyquist, Judy D. (2002): “The PhD: A Tapestry of Change for the 21st Century.” In: Change, Vol. 34, No. 6, November/December, p. 12-20

- Park, Chris (2005): "New Variant PhD: The changing nature of the doctorate in the UK." In: Journal of Higher Education Policy and Management, Vol. 27, No. 2, July, pp. 189-207
- Paul, Jean-Jacques (2002): "Postgraduate Training and Postdoctoral Careers : Recent Reforms and Experiences in France." Paper delivered at the International Conference "Science, Training and Careers. Changing Modes of Knowledge Production and Labour Markets. CHEPS, University of Twente October. URL:
<http://www.u-bourgogne.fr/labo-IREDU/2002/0205.ppt> (accessed 27 June 2007)
- Pechar, Hans, Thomas, Jan (2004): "Austria". In: Sadlak, Jan (ed.) (2004): Doctoral Studies and Qualifications in Europe and the United States: Status and Prospects. Bucarest: UNESCO-CEPES, pp. 13-35
- Powell, Stuart, Long, Elizabeth (2005): Professional Doctorate Awards in the UK. UK Council for Graduate Education. URL:
<http://www.ukcge.ac.uk/OneStopCMS/Core/CrawlerResourceServer.aspx?resource=8793819F-95F4-4E23-96B0-7B12757BB1B6&mode=link&quid=a57997aa5a9f4450bb141144a86634e6>. (accessed: 15 June 2007)
- Recotillet, Isabelle (2003): "Availability and Characteristics of Surveys on the Destination of Doctorate Recipients in OECD Countries." OECD Science, Technology and Industry Working Papers, 2003/9, Paris: OECD Publishing. Doi:10.1787/245308553443
- Sadlak, Jan (ed.) (2004): Doctoral Studies and Qualifications in Europe and the United States: Status and Prospects. Bucarest: UNESCO-CEPES
- Scott, David, Brown, Andrew, Lunt, Ingrid, Thorne, Lucy (2004): Professional Doctorates. Integrating Professional and Academic Knowledge. Buckingham: SRHE and Open University Press
- Slaughter, Sheila A., Leslie, Larry L. (2000): Academic Capitalism: Politics, Policies and the Entrepreneurial University. Baltimore: Johns Hopkins University Press
- Sorbonne Declaration (1998): http://www.aic.lv/ace/ace_disk/Bologna/maindoc (accessed 7 October 2005)
- Stewart, Debra, W. (2003): Current Issues in Doctoral Education in the U.S.: Change and Response. A paper delivered at the Deutsche Forschungsgemeinschaft (DFG) Meeting on Graduate Research Training in Würzburg, Germany, 1 July. URL:
http://www.dfg.de/wissenschaftliche_karriere/focus/2003/promotionsfoerderung/download/stewart.pdf. (accessed: 17 June, 2007).
- Sverker, Sörlin et al. (2006): A Public Good: PhD Education in Denmark. Report from an International Evaluation Panel. Danish Ministry of Science, Technology and Innovation. URL:
<http://videnskabsministeriet.dk/site/forside/publikationer/2006/a-public-good---phd-education-in-denmark/phd.pdf> (accessed 16 July 2007)
- Teichler, Ulrich (2005): „Future Challenges for Doctoral Education in Germany.“ Unpublished manuscript of a paper presented at a Conference in Kassel, in June
- Trends V (2007): Trends V: Universities shaping the European Higher Education Area. Written by Crosier, David, Purser, Lewis, and Smidt, Hanne. Brussels: EUA. URL:
http://www.eua.be/fileadmin/user_upload/files/Publications/Final_Trends_Report_May_10.pdf (accessed 17 June 2007)

- UK Council for Graduate Education (1995): Graduate Schools. Warwick: KCGE.
URL: <http://ukcge.ac.uk> (accessed 17 June 2006)
- UK Council for Graduate Education (1996): Quality and Standards of Postgraduate Research Degrees. Warwick: UKCGE. URL:
<http://www.ukcge.ac.uk/OneStopCMS/Core/CrawlerResourceServer.aspx?resource=6B22F9C5-DC02-4633-9964-579846D4B3A4&mode=link&guid=a57997aa5a9f4450bb141144a86634e6>.
(accessed: 17 June 2007).
- UK Council for Graduate Education (1997): Practice-based Doctorate in Creative and Performing Arts and Design. Warwick: UKCGE. URL:
<http://www.ukcge.ac.uk/OneStopCMS/Core/CrawlerResourceServer.aspx?resource=CD25644D-0D5A-41DA-8CC4-EEFADA55DB31&mode=link&guid=a57997aa5a9f4450bb141144a86634e6>.
(accessed: 17 June 2007).
- UK Council for Graduate Education (2002): Professional Doctorates. Warwick: UKCGE. URL:
<http://www.ukcge.ac.uk/OneStopCMS/Core/CrawlerResourceServer.aspx?resource=53BE34C8-EBDD-47E1-B1C7-F80B45D25E20&mode=link&guid=a57997aa5a9f4450bb141144a86634e6>.
(accessed 27 June 2007)
- Weissinger Ellen (2003): Diffusing Graduate Reform Initiatives in the Sciences: How Might “Institutionalisation” Really Work? A paper presented at the Merrill Conference in the Series: The Research Mission of Public Universities, June. URL: <http://merrill.ku.edu/PDFfiles/weissinger2003.pdf> (accessed: 16 July 2007)
- Williams, Garth (2008): “Canada”. In: Nerad, Maresi, Heggelund, Mimi (eds.): Toward a Global PhD? Forces & Forms in Doctoral Education Worldwide. Seattle and London: University of Washington Press, pp. 249-277
- Wulff, Donald H., Austin Ann E., & Associates (2004): Paths to the Professoriate. Strategies for Enriching the Preparation of Future Faculty. San Francisco: Jossey-Bass