

EUROPEAN UNIVERSITY ASSOCIATION

# DOCTORAL EDUCATION – TAKING SALZBURG FORWARD

## IMPLEMENTATION AND NEW CHALLENGES



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## INTRODUCTION

The purpose of this document is to provide guidelines for the continued implementation of reforms in doctoral education building on the Salzburg Principles and Recommendations. It is directed at university leaders who want to continue and deepen the implementation of Salzburg at the strategic level, ensuring a consistent, institution-wide approach to doctoral education. The document also provides recommendations for daily managers of doctoral education who look to keep their activities and processes up to date and responsive to new challenges for universities.

The recommendations in this document are the result of a consultation process with the members of the EUA Council for Doctoral Education (EUA-CDE), including a number of focus groups in 2014 and 2015 and discussions at the EUA-CDE Annual Meeting at the Technical University of Munich in June 2015.<sup>1</sup> In total, more than 200 universities and organisations from 39 countries have directly participated in this process.

This document argues that doctoral education reform should continue and provides recommendations on how to further implementation, make structures more coherent and gain ownership from all parts of the institution. It also considers challenges regarding ethics, digitalisation and globalisation, which have gained importance and were not sufficiently included in the Salzburg Principles and Recommendations.

## TAKING SALZBURG FORWARD

Doctoral education is central to the mission of universities. It provides the academic community and wider society with researchers capable of producing original knowledge and develops an environment critical to the knowledge society. Universities must articulate a comprehensive vision for the provision of doctoral education, encompassing the internal context of the institution, the role of doctoral education in society at large and the international perspective. This vision will enable universities to meet new challenges and realise the full potential of doctoral education.

This document aims to strengthen the implementation of the Salzburg Principles and Recommendations, and to assist universities in addressing new challenges in doctoral education. The Salzburg Principles from 2005 and the Salzburg II Recommendations from 2010 advocated the development of institutional structures for doctoral education and underlined the importance of original research in making doctoral education distinct. These Principles and Recommendations remain valid and applicable in the years to come.

**Europe's universities have come a long way in creating institutional support for doctoral education, but there are still many challenges within institutions to achieving the full potential of the Salzburg Principles and Recommendations.**

New challenges have appeared in the last five years: digitalisation has enabled the development of open research, open education and social media; standards for training in research integrity and ethics are urgently required; and research has become increasingly global. All these challenges require institutions to adapt approaches, guidelines and recommendations in order to prepare researchers for research environments that will be very different from those of their supervisors.

## INSTITUTIONAL STRUCTURES

Most of Europe's universities have established organisational frameworks to support doctoral education. Their purpose is to ensure excellent, open and inclusive research environments, transparent rules and procedures, as well as support for the professional development of both supervisors and doctoral candidates.

Institutional structures may take the form of doctoral schools, which operate on different levels in different institutions, where they ensure quality of provision and establish rules or guidelines for supervision and taught courses (where present) or provide career guidance for doctoral candidates. At times, however, they are dedicated only to a limited set of activities which in turn can be limited to a small part of the institution. Universities might have structures within certain programmes, which are absent in other departments or research groups. There is a risk

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<sup>1</sup> See <http://www.eua.be/activities-services/cde/the-shape-things-to-come.aspx>

that structures will be inefficient if limited to small units, if there is limited ownership by supervisors, and if there are different competing frameworks within one institution. Europe takes strength from the diversity of its doctoral education models, and this diversity should be cultivated, while maintaining a common goal for doctoral education.

It is important that structures are supported by institutional leadership and that they are embedded in an overall strategy for doctoral education, which defines their purpose and limits. Institutional leadership must allocate adequate resources and ensure that structures are sustainable in terms of funding and staff.

## CREATING SPACE FOR DIALOGUE

Doctoral schools have a potential far beyond making rules and providing services. They can be the place for ongoing debate about doctoral education among all interested groups. Few of the challenges presented below can be met unless there is open discussion and an attempt to reach a consensus. Ethics and open science are practiced daily in laboratories, in the field, in archives and in libraries; they are an integral part of the dissemination of research through writing or other forms of communication. Top-down management through hard rules or obligatory courses for doctoral candidates alone will not foster sound and open research. Only an open and critical research culture can achieve this, and such a culture must be instilled from the beginning of a candidate's research training.

Doctoral schools should establish continuous dialogue with researchers and doctoral candidates in a way that is compatible with existing national and institutional culture. They should become fora for exchange and agreement on good practice, and they should be the agent of change that implements good practice in a transparent way. Particular attention should be given to the systematic inclusion of the voice of doctoral candidates.

This means taking the initiative to systematically consult supervisors and doctoral candidates and institutionalising communication beyond ad hoc meetings and occasional surveys. Bodies such as advisory boards with supervisors, doctoral candidates, alumni and external members have been found useful by several universities. Peer-learning activities between supervisors have also been established in many

places. It is, however, essential that these activities are systematic, broad and inclusive, going beyond sporadic activities for small groups.

## BUILDING RESEARCH CAPACITY

The Salzburg Principles and Recommendations underline research capacity as the basis for good doctoral education. Research capacity must be continuously developed; as the competition for finances and research talent intensifies, this cannot be taken for granted.

Financing of research across Europe has either diminished or comes with more requirements measured through indicators for performance and impact. At the same time, competition between universities has been sharpened through rankings and excellence initiatives defining one-dimensional hierarchies. There is a clear risk that the fundamental values of research are being undermined by a focus on immediately quantifiable outputs.

In some institutions, funding is directed mainly at the universities' teaching mission, and staff have little time reserved to research activity. At the same time, weak incentives and little time for research makes it difficult to recruit and keep talented researchers.

This situation requires strong institutional leadership able to make strategic decisions for research, set priorities, and support bottom-up initiatives, providing possibilities for excellence in both basic and applied research. Doctoral education must be a central part of research strategies. Much of university research output comes from doctoral candidates and postdocs, and doctoral education is a key part of the pipeline of research talent: it is the first step in a research career, and it is an important point of recruitment of new researchers.

## NURTURING TALENT

People are key to developing research capacity and doctoral education is a natural and essential part of nurturing research talent.

Doctoral candidates have become more diverse in terms of origin, age and experience. Institutions should implement a coherent and transparent admissions policy that recognises diverse aspects

of research talent. Research talent should be cultivated and research-based learning integrated throughout all cycles of university education so that doctoral candidates are ready for independent investigation upon entering doctoral education.

The goal of doctoral research should be the development of a research culture characterised by rigour, resilience, originality, critical thinking, independence and the ability to create new

knowledge. This culture should be enhanced by exposing doctoral candidates to different disciplinary approaches and research environments within their field.

Doctoral candidates should be informed about the varied careers that require and benefit from a research culture, and they should be actively supported in their professional development.

**CONCLUSIONS AND RECOMMENDATIONS  
FROM THE BOLOGNA SEMINAR ON  
“DOCTORAL PROGRAMMES FOR THE EUROPEAN KNOWLEDGE SOCIETY”  
(Salzburg, 3-5 February 2005)**

- i. The core component of doctoral training is the advancement of knowledge through original research. At the same time it is recognised that doctoral training must increasingly meet the needs of an employment market that is wider than academia.
- ii. Embedding in institutional strategies and policies: universities as institutions need to assume responsibility for ensuring that the doctoral programmes and research training they offer are designed to meet new challenges and include appropriate professional career development opportunities.
- iii. The importance of diversity: the rich diversity of doctoral programmes in Europe – including joint doctorates – is a strength which has to be underpinned by quality and sound practice.
- iv. Doctoral candidates as early stage researchers: should be recognised as professionals – with commensurate rights – who make a key contribution to the creation of new knowledge.
- v. The crucial role of supervision and assessment: in respect of individual doctoral candidates, arrangements for supervision and assessment should be based on a transparent contractual framework of shared responsibilities between doctoral candidates, supervisors and the institution (and where appropriate including other partners).
- vi. Achieving critical mass: Doctoral programmes should seek to achieve critical mass and should draw on different types of innovative practice being introduced in universities across Europe, bearing in mind that different solutions may be appropriate to different contexts and in particular across larger and smaller European countries. These range from graduate schools in major universities to international, national and regional collaboration between universities.
- vii. Duration: doctoral programmes should operate within an appropriate time duration (three to four years full-time as a rule).
- viii. The promotion of innovative structures: to meet the challenge of interdisciplinary training and the development of transferable skills.
- ix. Increasing mobility: Doctoral programmes should seek to offer geographical as well as interdisciplinary and intersectoral mobility and international collaboration within an integrated framework of cooperation between universities and other partners.
- x. Ensuring appropriate funding: the development of quality doctoral programmes and the successful completion by doctoral candidates requires appropriate and sustainable funding.

# NEW CHALLENGES

## DEVELOPING AN ETHOS OF RESEARCH INTEGRITY

Research integrity and research ethics are important areas for action within institutions. There is increased social awareness about ethics and integrity in research, and new techniques raise new ethical questions: for example, big data raises concerns about privacy and data management; use of embryonic stem cells can cause religious or moral protest. As research influences policy decisions, medical treatments and technological solutions, the general public has legitimate concern that these results come from rigorous methods which have been ethically applied.

Researchers are under immense pressure to publish and this can lead to compromises of best research conduct: researchers can be tempted to enter a grey area between the application of rigorous methods and those that give faster and more spectacular results, such as the use of small sample sizes, selective use of data and the use of the “smallest publishable unit”. Such practices are counter-productive to reliable and robust research and to the development of the correct research culture of doctoral candidates. Moreover, they put public trust in universities at risk. Universities must be able to show that they respond to concerns about research ethics ranging from scientific method to privacy concerns and animal welfare.

Ensuring awareness of good research conduct for doctoral candidates is important in developing a common research ethos. This awareness is dependent on the daily practices to which doctoral candidates are exposed in their research environment. Awareness of ethical issues connected to specific techniques or situations must be embedded in daily practice and continuously developed. A willingness and consensus among all stakeholders to uphold high standards and best practices is critical if institutions are to develop a sound research culture. An ethos of research integrity must develop and be cultivated in research environments and institutional leaders must ensure this is made explicit and transparent in codes of conduct.

Universities must build this consideration into their doctoral education policies. Doctoral candidates should have knowledge

of national and international codes of ethics and integrity. They should be aware of the ethical issues related to their discipline and be able to foresee such issues in their own research.

This requires interaction between different initiatives: formal training and awareness-raising for doctoral candidates, appointing an ombudsperson, identification of best practices and clarity about what is unacceptable, as well as awareness of international and intercultural differences.

## THE DIGITAL CHALLENGE

Universities in particular and society in general are facing the challenges of digitalisation. Big data, open research – including the use of social media – and online learning offer new interaction possibilities for researchers.

Students and doctoral candidates have grown up in a world where information is shared and interaction happens with ease over the internet. The potential for sharing information has changed research and created opportunities for new ways of collaboration, often referred to as open science or open research. Such practices include the sharing of data and drafts before publication, open notebooks, and open access to publications. New generations of doctoral candidates will increasingly be familiar with models of blended learning with online content. It is not possible for institutions to directly control doctoral candidates’ use of digital tools, but the new possibilities for academic dialogue and self-guided online learning will enhance the competences and the independence of doctoral graduates, once the appropriate framework is provided.

Doctoral candidates at the forefront of harnessing digital possibilities, supervisors as well as university leadership can learn from their own practice and experience. However, universities must develop coherent policies and infrastructures for online sharing and learning in doctoral education that can be used in a coherent and responsible manner across the institution. Such policies must include the technical, legal and ethical aspects of open research<sup>2</sup> and open education, including clear guidelines for the recognition of online courses. Supervisors might need training and information about open research as well as clear incentives to follow institutional publication policies, especially regarding the use of repositories for open

<sup>2</sup> For example “EUA’s Open Access Checklist for Universities: A practical guide on implementation”, EUA 2015, <http://www.eua.be/activities-services/publications.aspx>

access. As in all cases, there should be a continuous dialogue within the institution to ensure the relevance and efficiency of institutional policies.

## THE GLOBAL VISION

Research is increasingly global, and universities as institutions have themselves become more globalised in parallel. Being globally active and identifiable is a strategic priority for university leadership, and doctoral education is an important component in this strategy. Doctoral candidates are recruited internationally, research projects share data and infrastructure between continents, and researchers publish with colleagues regardless of geographical distance. Doctoral candidates are the glue in global collaborations; they are mobile and can focus almost exclusively on their own research. International collaboration in doctoral education facilitates the sharing of practices between institutions and allows them to find synergies to develop common research capacity.

Regardless of their future career plans, doctoral candidates are likely to be working with partners from around the world after graduating. Being exposed to international environments will give valuable intercultural skills in addition to the benefits of being integrated in several different research environments. Though the mobility of doctoral candidates is important in itself, international doctoral education should be supported by institutional structures that develop the international aspect for the university as a whole, including adequate administrative capacity, funding, and the provision of the necessary research base.<sup>3</sup>

Universities have a particular responsibility associated with the international doctoral candidates they recruit: they are the entry point for talented researchers who contribute to the development of the future European knowledge society. Institutions must integrate international doctoral candidates in their research environments, value their contribution in terms of intellectual and cultural diversity, and support their development and careers in Europe or beyond.

## ENGAGING WITH OTHER STAKEHOLDERS

Doctoral education has great potential as a link between universities and society. Doctoral candidates enjoy mobility between different sectors through placements or in joint doctoral programmes with private sector companies. The models developed for collaborations with private companies can be extended to the public sector. After graduation, the vast majority of doctoral candidates find employment in non-academic jobs and take knowledge about universities and the academic culture with them to their new working environments.

On the strategic level, universities can use collaborations with non-academic partners and their alumni to build a continuous dialogue with other stakeholders, deepening knowledge about what doctoral education comprises, disseminating new research results, and gaining understanding of the labour market that doctoral graduates will enter. Long-term collaborations with companies have shown that common doctoral programmes can contribute to the innovation ecosystem, developing human resources and sharing knowledge between universities and non-academic partners.

Experience in non-academic settings gives added value to individual doctoral candidates. It provides them with first-hand knowledge about career options and different work cultures.<sup>4</sup> Mobility between sectors facilitates the development of the skills and competences of the individual doctoral candidates and enhances the knowledge and appreciation of university research and researchers by the non-academic sector. Universities should support such experiences within their priorities and their regional and national contexts. This can be done through modalities such as internships, common research projects, or joint programmes. Doctoral candidates should be informed about these options as a part of their individual professional development.

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<sup>3</sup> See also recommendations from the FRINDOC project: "Principles and Practices for International Doctoral Education", EUA 2015, <http://www.eua.be/activities-services/publications.aspx>

<sup>4</sup> See also "Collaborative Doctoral Education in Europe: Research Partnerships and Employability for Researchers – Report on DOC-CAREERS II Project", EUA 2015, <http://www.eua.be/activities-services/publications.aspx>

## EUROPEAN UNIVERSITY ASSOCIATION

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