



EUROPEAN POLICYBRIEF



DOCTORAL MODULE DEVELOPMENT

Recommendations for doctoral education to meet the needs of students and potential employers in industry and academia

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INTRODUCTION

Within the New Skills Agenda (adopted in June 2016) and in the Modernisation Agenda (adopted in May 2017) specifications on innovative employment-oriented curricula recommendations are described. The Open Science Agenda incorporates activities which makes it crucial for Higher Education Institutions to integrate new or existing skills courses into PhD programmes and to train data stewards. Especially the formal integration of skills courses developed with and by non-academic actors and provided in non-academic surroundings into curricula, will be a specific challenge.

Impact is expected on post-graduate candidates and early-stage researchers, careers, in closing the skills gap between research employment in academia and beyond academia. Expected impact also on the improvement of the innovation potential of future PhD candidates, by joint design of skills training courses and curricula of consortium partners into modernised PhD programmes. Expected impact on the joint collaboration between academia and stakeholders in the regions (hubs) by improving skills intelligence, skills visibility and comparability for better career choices; learning about future skills needs and employment potential of scientists of all (interdisciplinary) fields. Expected impact on the interdisciplinary and international mobility of researchers working under Open Science in line with the Innovative Doctoral Training Principles (IDTP).

EVIDENCE AND ANALYSIS

Going forward PhD students will need to ensure that they broaden their career perspectives – and their possibilities. To do so, however, they must be in a position to bridge the boundaries between academia, industry, policy makers and citizens. CHAMELEONS has brought together a team of researchers from across

Europe to investigate the gap between existing PhD education, and what is needed to bridge these boundaries. Working with practitioners, patients, PhD graduates and other stakeholders, CHAMELEONS is examining the gap in current knowledge, identifying what stakeholders perceive doctoral graduates require in order to work across boundaries, and together they are designing three modules that will be taken by a pilot group of 15 students from across Europe. The modules will develop career planning skills, boundary-spanning communication skills, extend student networks, and advance their research skills. Students and stakeholders will work with the CHAMELEONS team to review and revise these modules. Tools, template, and teaching plans will be made freely available to PhD programme designers and supervisors.

Work package 1 Gap Analysis:

Systematic Review Findings

A systematic review of academic literature investigated intersectorality and interdisciplinarity at doctoral level. It found that doctoral education that will meet the needs of both students and potential employers in industry and academia requires the development of transferrable skills; the creation of formal and informal opportunities for interaction and networking; thoughtful and integrated supervision and mentoring; the development of supportive research cultures at departmental and university levels; and the nurturing of strong, boundary spanning professional and personal identities.

Survey Findings

Surveys were carried out with two groups: PhD students/recent graduates; and PhD programme designers. The surveys indicated that most PhD students do not attend courses or modules that aim to broaden their career opportunities outside academia and most directors do not organize such courses. For the ones that do, the courses are not embedded in the PhD program, but take the form of external activities such as webinars/seminars or summer schools. These courses are often organized by academic organizations in collaboration with industry and tend to be interdisciplinary. Such programs give students the opportunity to broaden their knowledge by merging different fields of science.

The main reasons for selecting a specific course, seem to be structural. The students prefer brief and comprehensive courses to enrich their skills in specific fields. On the contrary, directors believe that a longer period and the involvement of more disciplines would improve the courses. Finally, the students want more practical modules that allow the direct application of the obtained knowledge.

Work Package 2 Design:

State of the Art Tool Kit Development

Based on the abovementioned survey and literature review findings, a review was undertaken to identify relevant available modules across the consortium and further afield. These were refined to develop a state-of-the-art toolkit of available modules in key developmental spaces across Europe (see Figure 1). First, it provides input for decision making and planning of CHAMELEONS module delivery through analysis of available learning platforms against the CHAMELEONS requirements. Second, it describes a Google Classroom implementation of learning resources that can be made available for CHAMELEONS consortium.



Figure 1: State-of-the-art Toolkit Structure

This toolkit can be further developed into an evolving resource which could help early-stage researchers also outside CHAMELEONS consortium.

Findings: Module title Forging relationships: Building and Sustaining your Doctoral Network
 Analysis of the results of the co-design workshop revealed 4 key learning objectives for doctoral graduates to: 1. Develop networking and communication skills. 2. Understand user centred research design. 3. Market research capacity and research skills. 4. Build an understanding of themselves and others. This module aims to broaden the skills and competencies of students in the areas of networking and communication. The student will develop a set of tools, skills, and strategies for managing teamworking within interdisciplinary and intersectoral contexts. They will learn to communicate with different audiences. Students will develop user centred research design skills. They will learn how to present and market their research capacity and skills while at the same time building an

understanding of themselves and their own career pathway. Throughout the module students will be challenged to apply their new knowledge through teamworking and networking activities. The module is student-centred whereby doctoral students will develop skills which they can use within their PhD research, but which will also help them to better understand themselves and their PhD journey.

POLICY IMPLICATIONS AND RECOMMENDATIONS

- Doctoral education that will meet the needs of both students and potential employers in industry and academia requires the development of transferrable skills; the creation of formal and informal opportunities for interaction and networking; thoughtful and integrated supervision and mentoring; the development of supportive research cultures at departmental and university levels; and the nurturing of strong, boundary spanning professional and personal identities.
- In order to enable doctoral students to expand their career horizons beyond academic more intersectoral and interdisciplinary modules need to be available for them during their doctoral education. Short, intensive modules which allow the application of knowledge are favoured by students.
- Careful consideration should be given to determining the optimal means for module delivery.
- In relation to module design there should be a focus on the following: developing networking and communication skills; developing skills to market their own research capacity. It is also important to enable students to build an understanding of themselves in their own ecosystem with a view to their further career opportunities.
- Close collaboration with diverse stakeholders during module design and development yields more creative, applied, and focussed learning for students.

SUSTAINABILITY AND LEGACY

Outputs of the CHAMELONS project to-date include:

- A systematic review of the literature in relation to developing state of the art interdisciplinary and intersectoral doctoral learning,
- The state-of-the-art toolkit bringing together the interdisciplinary and intersectoral courses identified within the surveys and across the consortium. This tool kit will soon be available on the CHAMELEONS website.
- A bespoke module co-designed with key stakeholders to be delivered in April 2021.

Future outputs will include two additional modules as well as the results of the module evaluations which will inform future PhD education design.

PROJECT OBJECTIVES AND METHODOLOGY

The overall objectives of CHAMELEONS are as follows:

1. To develop a range of interdisciplinary, inter-sectoral and international modules, designed to broaden the skills of PhD graduates, and improve their employability.
2. Develop new and innovative educational interventions to improve the learning experience offered by higher education to shape more adaptable, entrepreneurial, and employable graduates.

Work package 1 Gap Analysis:

Methodology: Systematic Review

A systematic review of publications was undertaken to identify and discuss the educational requirements of PhD and Post-doctoral graduates with particular attention directed to skills required to enhance the possibilities of graduates gaining employment beyond the academic sector.

Methodology: Surveys

Two surveys were undertaken, one of PhD graduates and early postdoctoral students; and a second of those involved in developing PhD modules in order to ascertain their attitudes towards, and requirements from, courses/modules that offer and prepare them for intersectoral engagement.

Work Package 2 Design:

Methodology: Co-design with key stakeholders through World Café (WC) participatory method

In order to design a curriculum for doctoral students with an interest in connected health, stakeholders from industry, clinical care, charities, patients, patient representatives, government, recent doctoral graduates, and academics were invited to participate in a “World Café” participatory method for collecting qualitative data. Owing to the COVID-19 health situation this took place via Zoom.

PROJECT IDENTITY

PROJECT NAME

CHampioning A Multi-sectoral Education and Learning Experience to Open New pathways for doctoral Students (CHAMELEONS)

COORDINATOR

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FUNDING SCHEME

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DURATION

March 2020-February 2022 (24 months)

BUDGET

EU contribution : €998,278.75

WEBSITE

<https://www.chameleonsproject.eu/>

FOR MORE INFORMATION

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FURTHER READING

Accepted

Cusack, Isomursu, Garcia, Filos, Chouvarda, Mountford; Interdisciplinary and Intersectoral Doctoral Education Design to Improve Graduate Employability. Accepted for: International Conference on Education and New Developments (END 2021), Virtual, 26-28 June 2021.

Under Review

Kosyvra, Filos, Mountford, Cusack, Isomursu, Chouvarda; PhD courses and the intersectoral experience: a qualitative study *Submitted to: 7th International Conference on Higher Education Advances (HEAd'21)*, Valencia, Spain, June 22-23 2021.

Leniston & Mountford, 2021, Born or made - can interdisciplinary and intersectoral doctorate education create institutional entrepreneurs? A systematic review. *Submitted to: 7th International Conference on Higher Education Advances (HEAd'21)*, Valencia, Spain, June 22-23 2021.