Chapter # 26

WHAT PHD STUDENTS WANT FROM CAREER-RELATED MODULES: THE CHAMELEONS PROJECT
An evaluation of three interdisciplinary, inter-sectoral and international modules

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ABSTRACT
CHAMELEONS (Championing A Multi-Sectoral Education and Learning Experience to Open New Pathways for Doctoral Students, H2020-SwafS-2018-2020), is a programme of 3 EU-funded interdisciplinary, inter-sectoral and international modules that aimed to broaden the skills of PhD graduates improving their employability in academic and non-academic environments. Fifteen doctoral students from five European universities were recruited. This chapter represents evaluation conducted on all 3 modules. In terms of programme content, students perceived that real-time assessment, reflective learning, engagement with course coordinators and the opportunity to engage with practical research tools (Photovoice, Ecosystem Mapping and Walk My ID) all enhanced their learning. They suggested more group activities to enable them to better network with their doctoral colleagues as well as more practical activities. In terms of programme delivery students expressed a desire to have more physical face-to-face engagements while understanding the Covid-19 constraints. When given the opportunity to add freeform and unprompted comments, students almost without exception expressed their satisfaction with and appreciation for the modules. In terms of programme outcomes one student expressed an aspiration to be "more sure" of their skill set and marketability complimenting the focus on practical learning in the programme content review.

Keywords: doctoral education, programme evaluation, stakeholder design, interdisciplinarity, intersectorality.

1. INTRODUCTION

Collaborative doctoral programmes assist the knowledge society in finding innovative ways to address sustainable development goals by asking creative questions and finding creative solutions. The aim of CHAMELEONS (Championing A Multi-Sectoral Education and Learning Experience to Open New Pathways for Doctoral Students), was to develop interdisciplinary, inter-sectoral and international modules that broaden the skills of PhD graduates improving their employability in academic and non-academic environments. Chameleons was an EU H2020-SwafS Science with and for Society, Coordination and Support action (www.chameleonsproject.eu). The objective of this project was to develop new and innovative educational interventions to improve the learning experience offered by higher education with the intention of shaping more adaptable, entrepreneurial, and employable doctoral graduates, ready to meet the challenges of the future.

CHAMELEONS comprised a programme of 3 such modules. These modules were designed online through collaboration with stakeholders from industry, charitable

organisations, recent doctoral graduates, academics, patients, educational technologists, and librarians (Cusack et al., 2021). The themes set for the three CHAMELEONS co-designed modules were:

- Module 1: Forging relationships - Building and Sustaining your Doctoral Network
- Module 2: Managing the Project - Keeping on Track with an Eye to the future
- Module 3: Starting your Career - Future Proofing your Career and Getting a Job

These were designed to provide a continuum of learning objectives that use constructive learning methods to advance logically through the modules. Each module advanced the students' depth of knowledge and understanding. In each module the topics were organized within the four following learning threads:

- Build an understanding of yourself and others
- Develop networking and communication skills
- Understand ethical user centred design
- Market your research capacity and skills

2. BACKGROUND

Ten years from now, jobs will be more knowledge and skills-intensive than ever before, globalisation and technological advances indicate that there will be changes in sectoral structure and demand for new types of skills we are not even currently anticipating (EU strategy for modernising Higher Education, 2011). Typically, less than half of doctoral graduates will be employed in academia immediately after graduation, with less than 10% to 15% achieving a long-term academic career (Euraxind). Current doctoral curricula may not, however, nurture the big thinkers and creative problem-solvers that society needs (Bosch, 2018).

At a professional and research level, international, interdisciplinary and inter-sectoral networks are on the increase with established researchers collaborating within and across disciplines to increase and improve innovation, creativity and knowledge. More recently, this is being mirrored by the establishment of interdisciplinary and inter-sectoral doctoral research networks, the intention of which is to train PhD graduates for careers both within and outside academia and who are equipped to address societal challenges (see for example Mountford et al, 2018). Such collaborative doctoral programs can assist the knowledge society in finding innovative ways of approaching the world's problems by asking creative questions and finding creative solutions within multiple employment contexts.

Previous research has shown that key areas of focus for interdisciplinary PhD programmes should include the extraction of value from the interdisciplinarity; student motivation over the lifetime of the interdisciplinary programme, and relating to others both within and external to the programme (Mountford, Coleman, Kessie, & Cusack, 2020). Policy-makers and practitioners have highlighted the lack of transferable skills in doctoral graduates, but also emphasize attributes and experience (rather than specific technical skills) as key hiring factors (Leniston, Coughlan, Cusack, & Mountford, 2022). This study aimed to assess whether a particular programme of modules, designed to address these challenges raised in policy, practice, and academic circles, had in fact made a difference to the learning and development experiences of 15 PhD students.

3. METHODS

Fifteen doctoral students (Female=9, Male=6) from five European universities (Aristotle University of Thessaloniki, Greece; University of Oulu, Finland; University of

Porto, Portugal; Maynooth University, Ireland; University College Dublin, Ireland) were recruited. The students were all undertaking doctoral studies loosely linked to Connected Health. Their studies were in the following areas: Economics, Data Analysis, Biomedical and Chemical Engineering, Medical Informatics, Public Health, Sports Science, Digital Health, Obesity Prevention and Adopting Emerging ICT.

The Chameleons project commenced in March 2020 just as the world was in the grip of a global pandemic and as Europe completely locked down. We saw the closure of all sectors of society including education. The original intention of Chameleons was to design and deliver three in-person modules for doctoral students in the field of Connected Health, from five educational institutions across Europe. However, the pandemic required Chameleons to move on-line. Due to COVID-19 restrictions, the first two modules were delivered remotely via Zoom. Module 1 took place in the week of 21-28 of April 2021 and Module 2 between the 8th and the 14th of September 2021. With the gradual opening of the European society to mobility and reduction of the COVID control restrictions, it was possible to organize Module 3 to be delivered in-person in the week of 21 to 25 of February 2022. As each module was completed the evaluation and feedback from the students informed the development of the next module. The iterative design process used in this project ensured that the module designs were informed by key stakeholders including those who had experienced the curriculum itself.

One week after each module was completed the students were invited to complete an anonymous questionnaire. The questionnaire was hosted on Google forms. The questionnaire consisted of sixteen questions, comprising thirteen closed questions with a five-point scale Likert Scale, and three further open-ended questions. The use of the Likert Scale model for questions 1-13 aided in providing a quantitative evaluation of the module while the final three free text questions provided a qualitative insight into the participants' perceptions of the Chameleons modules.

Questions 1 and 2 asked students about the module objectives and whether they felt that they had achieved these objectives. Questions 3 to 5 related to the online context of module delivery and asked students whether they found the module to be inclusive and/or engaging both in terms of content and context. Question 6 asked students to reflect on whether they had benefitted from the module, with question 12 asking them to qualify this response. Question 7 asked for comment on whether the practical elements of the module had allowed them to link theory and practice. Question 8 and 9 enquired as to whether the assessment method had consolidated their learning and whether they saw this learning as relevant to their future career. Question 10 asked whether they would have enrolled in the module if they had had more prior information on its content, while question 11 asked how they now felt about enrolling having completed the module. Question 13 asked them if they intended to attend the next Chameleons module. Questions 14 and 15 were free text responses that asked students to identify three aspects of the module which assisted their learning and three changes they would suggest that would enhance their learning. Finally, question 16 offered students an opportunity to provide additional comments on the module in a free text format. In addition to the end of module questionnaire, each day of the module students were invited to submit a 100 word reflection on what they had learned and the experiences that they had gained that day. In doing so, students were asked to focus on the following three questions:

a) Do you envisage a role for the learning you experienced today in your own PhD experience? If yes, what do you envisage this role might be and if not, why do you not think it is relevant?

b) Do you think this learning could impact your career? If yes, how and why and if not why not?

c) Give one example of where and how you might potentially use this learning.

The primary purpose of these reflective assignments was to reflect on the outcomes of the day, to promote teamwork, and to practice communication and discussion with their peers and speakers. Consent was, however, sought and received from each of the students to use these reflections to strengthen the assessment of the programme. These reflections were, therefore, anonymized and coded in a grounded theory process (Braun & Clarke, 2006). A total of 58 responses was collected over the week of module 1; 59 over module 2; and 42 responses in module 3.

4. FINDINGS

Fifteen doctoral students from across five European universities (University of Porto, Portugal; Oulu University, Finland; Aristotle University, Greece; Maynooth University Ireland; University College Dublin Ireland) were recruited to Chameleons. The findings from the evaluation questionnaires for both modules are presented in the following sections.

4.1. Programme Content

Participants were asked what had most enhanced their learning. Students identified real time assessments and reflective learning as particularly helpful, as outlined by the following participant free text comments:

"Allocated time for working alone on the first day. Having 15-20 minutes to reflect on an exercise alone was really helpful in digesting what we learned." (Module 1, Respondent 12) "Reflective learning was quite useful, because after a long day we were urged to remember what we learned and think of scenarios that it would be helpful, thus developing a stronger connection with the learning material." (Module 1, Respondent 13)

"Reflective diaries, self-assessment assignments, refresher quizzes." (Module 2, Respondent 3) were important components of learning.

The participants identified that they took inspiration from engagement with course coordinators and potential employers from academia and industry

"I think that the most valuable aspect was that we had the opportunity to freely chat with the speakers and ask them questions." (Module 1, Respondent 7)

"Opportunities to speak to people working in industry, with a blended academic/industry approach who spoke candidly" (Module 1, Respondent 3)

The opportunity to engage with practical tools such as the Photovoice research methodology[4] was also highlighted as important:

"Photovoice- learning a practical skill that we can use personally or for our research." (Module 1, Respondent 12)

In relation to module 2, participants highlighted the opportunity to engage in practical activities as important, namely Walk My ID, this is illustrated as follows:

"Walking my ID activity allowed me to reflect on my personal motivations, worthwhile exercise…Checking in with the group again was a nice element for interaction and engagement with flow students during a time when interactions have been limited" (Module 2, Respondent 2).

In relation to module 3, participants were particularly positive about the inclusion of mock interviews:

"the mock interviews were the best part of the module, which gave me not only the chance to practice the interview skills, but they also provided opportunities to meet and share

information and contacts with academic and non-academic staff. Invaluable! Giving students the opportunity to network with academic and non-academic staff was fantastic" (Module 3, respondent 5).

"I now know what I need to do prior a job interview and what I need to prepare, i.e., the potential questions that I might get asked and those that I might ask." (Module 3, Respondent 5)

Other elements that were highlighted by smaller numbers of students included:
- a debate that saw industry-located PhD holders and academia-located PhD holders articulate their views and experiences of the two different sectors as PhD career targets.
- The development of a PhD career board game as a group project throughout the week.

4.2. Programme Delivery

There was a strong desire for more physical and face-to-face engagements. The participants acknowledged the complications of Covid-19 on having in-person sessions but expressed a strong interest in meeting face-to-face.

"I think mostly helpful for learning would be to get to meet everyone and collaborate face to face. Even though I think everything has worked well remotely." (Module 2, Respondent 11) "Despite being held online, the module was interactive enough to facilitate the learning." (Module 2, Respondent 15)

"..... I would probably like is having more time for the breakout sessions because it would enable participants to be more engaged with each other. Notwithstanding that the level of engagement was fantastic, I felt that during the main sessions, we could not really engage with other participants. We could only use the chat box. I know that this is a problem related to the distance learning and the module organization was excellent. In a face-to-face module, engagement between participants would have been assured by the coffee breaks." (Module 1, Respondent 7)

A number of module participants indicated the need for more breaks in the timetable: *"A little more space in the timetable or bite sized learning. Regular breaks for zoom sessions I find are really helpful" (Module 1, Respondent 3).* Echoing this sentiment, another participant commented *"The overall schedule was too intense with very short breaks. I had expected to catch up on my own PhD work/emails in the morning and evening but* this wasn't always *possible as I was so exhausted from looking at the screen. I also did not expect that I would need to stay on Zoom longer in the evening for group work." (Module 1, Respondent 12) "Face to face for module 3 will be great, I think zoom fatigue very difficult to avoid towards the end of the week.... " (Module 2, Respondent 2).*

This was successfully addressed in module three with respondents across the board naming in-person interaction as one of the most beneficial elements of that module:

"The in-person activities and lectures were far better than the online ones." *(Module 3, Respondent 10)*

"In-person element, hands-on and creative work like the board game made it feel less like a lecture" *(Module 3, Respondent 6)*

"Being together on spot interacting and participating live" *(Module 3, Respondent 3).*

"That we attended in person and got to know each other better" *(Module 3, Respondent 9)*

While all students felt that the time allocated to the module (1 week) was optimal (see Figure 1 below), a number of students did comment that not enough time was allocated to group project tasks.

"Probably, it would have been better to have more time allocated for the group works, or having less group works to do" (Module 3, Respondent 5)

Figure 1.
Response to Question: "Was the module length too long, too short, or just right?"
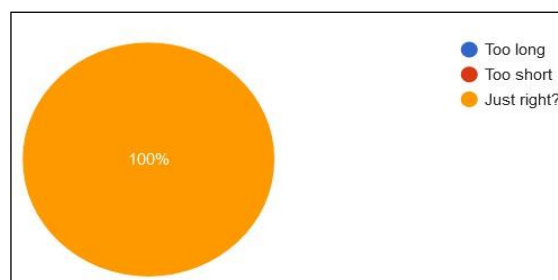
4.3. Programme Outcomes

One participant expressed an aspiration to be "more sure" of their skill set and marketability upon completion of Module Three, complimenting the focus on practical learning in the programme content review. They identified *"Building an understanding, research methods & design, marketing research capacity & skills" (Module 2, Respondent 11)* as important. This echoed a similar request in the review of the earlier Module 1 that suggested the need for *"more practical methodologies to build our career" (Module 1, Respondent 11).* Another participant identified the need for *"more focus on how to communicate better my work, discuss the commercialization of research finding" (Module 2, Respondent 6).*

While another participant commented *"I used the module to take some concrete career planning steps, I am more active on linked in and twitter and arranged a site visit to a research centre and met some new contacts" (Module 2, Respondent 2)*

Following the completion of module 3, a number of students reflected a desire to have produced something tangible, as a group, from the programme:

"*One idea I did have was to use the work we competed towards some tangible research outputs. - considering the 2 year long duration it may have worked well for students to collaborate and work on a paper/poster together.*" (Module 3, Respondent 2)

"*I insist that we should have created something out of this wonderful experience, a booklet, a project, an article or any other initiative.*" (Module 3, Respondent 3)

5. FUTURE RESEARCH DIRECTIONS

Students said they wanted face-to-face modules when evaluating modules 1 and 2 but when it came to a face-to-face module 3 there was initial reluctance amongst a small but significant portion of the students. Many of the students who were at first reluctant later rated module 3 extremely highly citing in person interaction as key to this experience. Future research might profitably explore the role of fear, inertia, perceived time savings, and other barriers to the uptake of face to face teaching at PhD level – particularly post Covid. Given the emphasis placed on the value of the face to face experience in our evaluated modules it seems particularly important that we identify ways to overcome such barriers to facilitate the types of learning and experience found in the CHAMELEONS modules.

6. CONCLUSION/DISCUSSION

Despite the need to pivot the delivery of Chameleons, from face to face to on-line, it is clear that the Chameleons doctoral students benefitted from engaging with the two modules already delivered. The iterative design process employed for these modules enabled the participant evaluation to inform the module design process swiftly and meaningfully. By default, the module designers also learned about online education delivery.

Participants valued the development of reflective skills (reflective writing, Walking my ID) and research methodologies (photovoice (Wang & Burris, 1997), ecosystem mapping). It is interesting to note that they highlighted the importance of 'protected' time within the module to develop these skills. All three modules were delivered over a five-day period - the first two online modules contained an intervening weekend while the third module ran Monday to Friday. While online, this weekend break proved to be important in order to give students an opportunity to reflect on their learning, to develop their skills (they undertook a photovoice project in module 1, and a Walking my ID project in module 2). However, the participants also stressed that engaging in online education is tiring and that regular breaks away from the screen are necessary. The evaluation of module 3 demonstrates that less breaks are necessary when students were engaging face-to-face over a five day period.

It was clear that participants would have preferred a face-to-face engagement from the beginning had the health situation permitted. The participants lost a number of elements of their education owing to the online environment. The 'hidden curriculum' (Giroux & Penna, 1979) which is not predetermined by educators is limited in the online context. Skills which are important for professional development such as networking, learning to make research links, disseminating your research, and socializing with peers were not available to the participants. The sensemaking and sense-giving activities (Leniston & Mountford, 2021) that take place in the informal spaces between the formal curriculum elements were more difficult to achieve in an online environment.

In relation to programme outcomes, this concept of enabling doctoral students to be "more sure" of their skill set and marketability was taken up in module 3. In order to build student confidence, while developing their skills, each student undertook 2 'mock' interviews. Each student was tasked with identifying three job opportunities. They were asked to apply, as part of the module task, for each of these jobs. The applications were submitted in advance of the module. The students were interviewed by a panel of 2 people who role played as interviewers for the companies/institutions represented in the job advertisements. The interviews were conducted in a close to authentic conditions as possible, mimicking a job interview. On completion of the interviews, the interviewers gave the student feedback. This task offered students the opportunity to market themselves to potential employers through a variety of communication channels. The feedback served to support them in this endeavor. This real-world experiential learning enabled them to apply what they had learned during the two modules.

The careful evaluation of module 1 and 2 guided the development of module 3 and led to a successful completion of the programme in the view of the students. The objectives of Chameleons were firstly to develop a range of interdisciplinary, inter-sectoral and international modules, designed to broaden the skills of PhD graduates, and secondly to improve their employability and to develop new and innovative educational interventions to improve the learning experience offered by higher education to shape more adaptable, entrepreneurial, and employable graduates. The way is which this was achieved within Chameleons could be easily adapted to broaden the development of employment skills in doctoral graduates beyond connected health.

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