OPENING DOORS

Opportunities and education in networked innovation for new graduates with PhDs using open online resources

Science with and for Society in Horizon 2020

H2020-SwafS-2020-1

REPORT PRESENTING THE CAREER DEVELOPMENT OF OPENING DOORS COURSE PARTICIPANTS

Deliverable 3.3

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Contributors:

Title / Name	Organisation
Dr. Eleni Makri	University College Dublin
Dr. Denise McGrath	University College Dublin

Formal Reviewers:

Title / Name	Organisation
Denise McGrath	University College Dublin

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Executive Summary

This document explores the career development of "Opening Your Research to Collaborative Futures" course participants (WP3.3). The report describes the career planning activities that were undertaken by the course participants. Background literature is first provided to contextualise the analysis. The next section presents the analysis of 25 participant post-course reflections that were analysed qualitatively along with 13 exit interviews--for their ideas/activities with respect to career planning and how the course supported them in this regard. It appears that both dedicated career development activities and the instructional design of the course supported career development planning and concrete action taken and planned for the future.

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1. Introduction

The OPENING DOORS project, funded by the European Commission under Science with and for Society in Horizon 2020, developed an open, intersectoral, interdisciplinary, international, networked, state-of-the-art, scalable, sustainable, and fit-for-purpose challenge-based educational course in open science and open innovation for PhD graduates and post-doctoral researchers across Europe. Opening Your Research to Collaborative Futures' ultimate goal was to shape more "engaged research" (Holliman, 2017) innovative, socially aware, entrepreneurial and employable doctoral and post-doctoral researchers, prepared to meet the challenges of the future. This report is guided by the question, what was the impact of career development activities undertaken in the course on participants' attitudes and actions toward their own career development?

1.1 Literature on the Career Development Profile of University MOOC Learners

While our course shared some similarities to MOOC design, it was certainly not "massive". It is more in line with a model called "small, open online course" i.e. smOOC, which involves collaborative network interactions but uses the structure of xMOOCs by providing weekly instructional videos, reading materials and relevant web resources for each unit (Arnold, Kumar, Thillosen, & Ebner, 2014). We will leverage the ever-increasing MOOC research base to understand the potential of open online learning in career development. Professionals seemed to be mainly motivated to take up MOOC modules to align with and develop their professional profile (Milligan and Littlejohn 2017). They perceive that MOOCs can enable them to be more successful at work and to follow current job market trends and needs, thus providing a career development pathway. Radford et al. (2014) also report that a substantial number of MOOC learners aim to post their MOOC certificates on their professional social media accounts (e.g. LinkedIn, etc.; Chen et al., 2016a). Thus advancing one's own employability continuum (i.e. either moving into a new employment field or being promoted into the current one exercised) seems to be a significant learning motivation factor for MOOC students to take the offered programme (Dillahunt et al., 2016). MOOCs also provide a fertile ground for the development of communities of practice, which tend to further support the career development of MOOC learners. Wang (2017) suggests that this complementary career development aspect might be particularly useful MOOCs emerging in a promising field, and Open Science could be seen as such. Wang, Paquette, and Baker (2014) report that a number of MOOC learners share research and academic networks either during and/or post-MOOC completion. Chen et al. (2016b) report their tracking of programming MOOC learners after-MOOC finished in respect of their learning activities taken on the Github repository. Those who had not used Github before began using the programming language they had been instructed on in Github post-MOOC. In concluding her review, Wang (2017) suggests that a more systematic exploration of MOOC learning achievement beyond MOOC module completion including after-MOOC career development, might be a useful indicator of the ways that MOOC learning has contributing to students' career profile and lifelong career advancement.

1.2 Career Development Activities on the Course

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In addition to our skills intelligence work that highlighted the importance of career development skills by stakeholders from open innovation/open science networks, this MOOC evidence base highlighted the possibilities present in open, online learning for the creation of communities of practice and career development. A model of PhD career planning known as the PhD Career Ladder Programme was chosen as a career planning activity for our smOOC, specifically because it is suggested as part of this model to create communities of like-minded researchers around similar career paths, which we felt could be instrumental in creating lasting communities of practice post-course. This programme was created by two PhD researchers and is free to use. The steps in the PhD Career Ladder programme are highlighted in figure 1. Steps 1 and 2 were covered during synchronous class time with in-depth group discussions. The screenshot in Figure 2 describes the activities in Step 1 of this process.

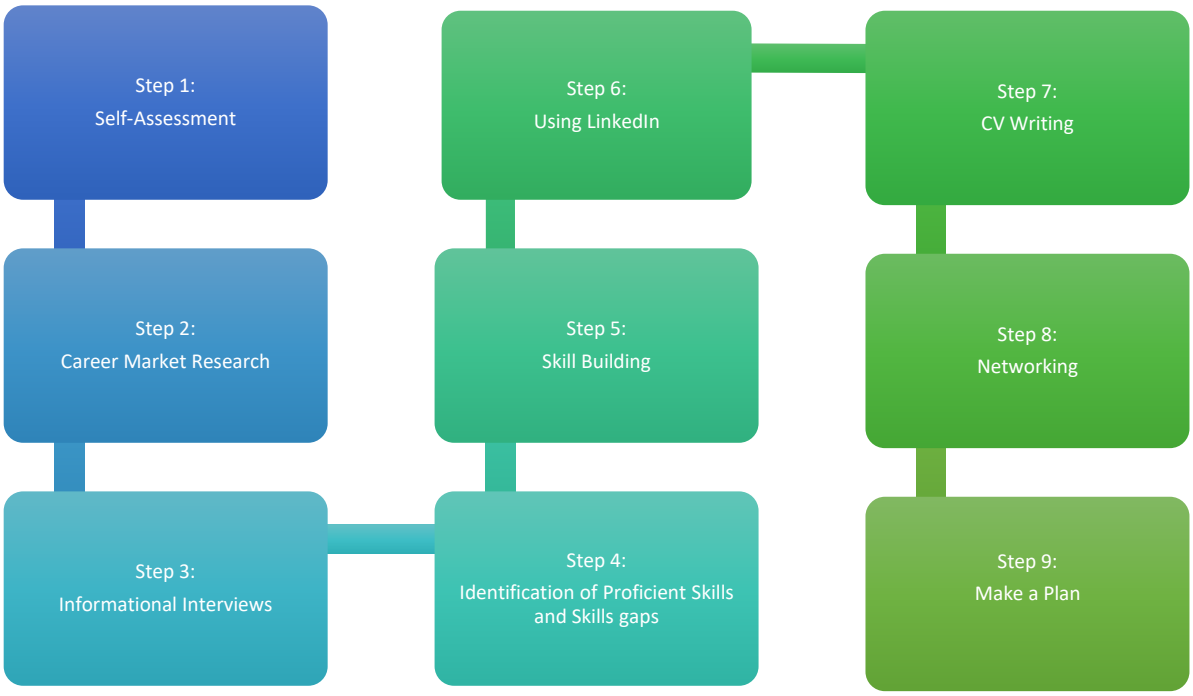

Figure 1: **9-Step PhD Career Ladder Outline**

A recent PhD graduate who had already held two industry positions was a guest speaker on the course, which the course participants enjoyed very much. The speaker gave a very honest account of his professional and emotional experience moving outside academia and gave excellent tips on how to network. The challenge-based learning activities also provided students with an experience of a non-academic, interdisiciplinary working context where they had to apply their skills to a completely unfamiliar problem. Students worked in small groups to solve a "real-world" challenge presented by external organisations, with a 3-week window to come up with solutions. This timeline is also a realistic industry timeline, compared with longer deadlines in the PhD experience.

One individual assignment option that students could choose was to undertake and report on the necessary preparatory work to secure an internship e.g. identifying companies, identifying who to speak to within those companies, drafting correspondence, updating LinkedIn profiles and CVs to get ready to send, and guidelines were provided for this process.

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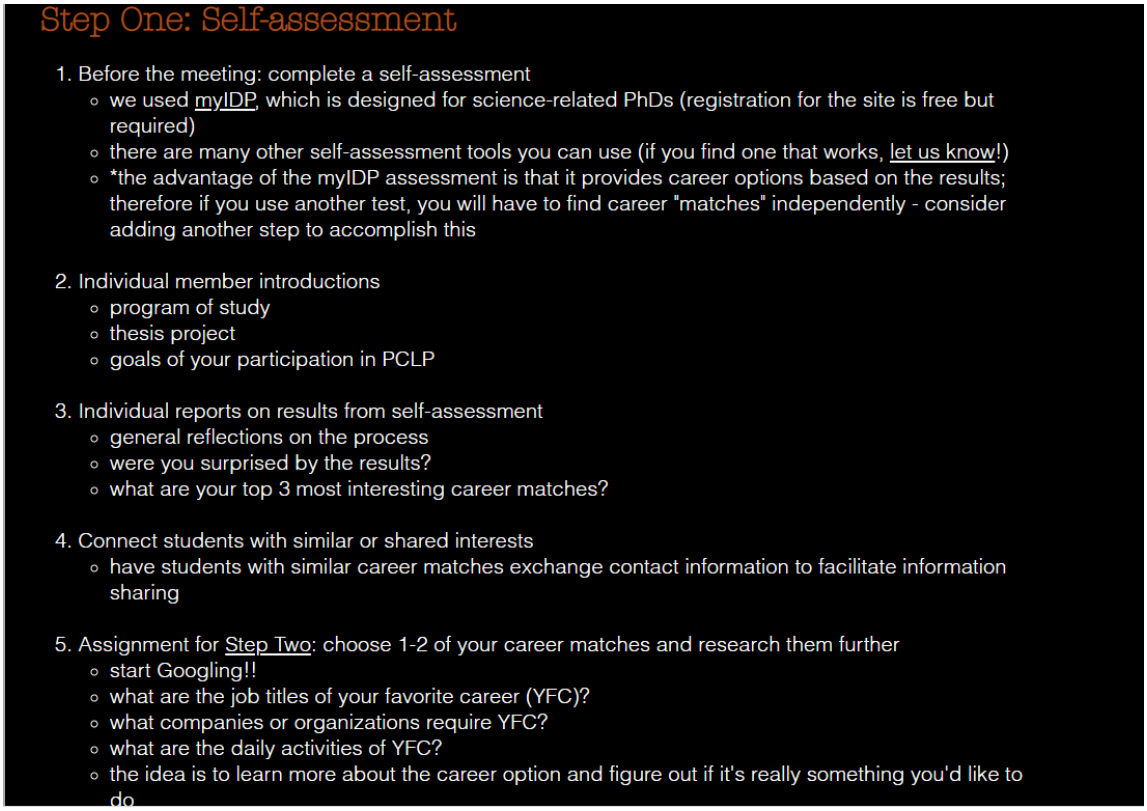

Figure 2: Screen shot of Step One in the PhD Career Ladder: Self-Assessment

2. Analysis of interviews through the lens of career development activities during and after the course

2.1 Data Collection:

Thirteen course participants volunteered to take part in the follow-up interview 2 month after module completion. These were undertaken over Zoom by the research scientist on the project who was not involved in the delivery of the course. Participants provided informed consent for the interviews to be recorded and transcribed verbatim. Interviewees answered 7 questions that explored their perceptions of the programme as career development experience and any actions they had taken as a result of engaging with these activities. These interview questions invited learners to reflect upon their ideas about the career development activities during the programme, any concrete steps taken in relation to their career planning, possible barriers and/or facilitators experienced in their career planning, their reflection upon the employment sectors they would like to get a job after they earn their PhD degree, identification of the important factors that would affect their decision to choose a job post-PhD completion, any professional development opportunities currently taken or planned. This was a semi-structured interview so any point brought up by the interviewee could be explored further as deemed necessary

2.2. Data Analysis

The researcher familiarised themselves with the data, and read through the transcribed texts to acquire the sense of the whole, that is, to learn “what’s happening”, before the texts were broken into smaller meaning entities containing the insights they needed, that is, the sentences or paragraphs

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that included the aspects related to each other, answering the questions set out in the aim (Graneheim and Lundman, 2004) together in categories. The researchers decided what constituted the themes and what conclusions might be drawn from the results (Patton, 2002). Then, they checked whether all aspects of the content have been covered with respect to the target (Burnard, 1991). Once the thematic areas were established, the analysis and writing up process was completed. The researchers were interested in understanding of the context-specific issues arising and in indicating diverse perspectives rather than targeting at "singular truth and generalization" (Rolfe, 2006).

2.3 Findings

The following themes were identified by the researchers:

Benefits of planning for career development

Having time to reflect on career development during the course was found to be beneficial by most interviewees, except for those nearing a) retirement and b) the end of their PhDs with career plans already in place. Indeed, it was the reason that some researchers joined the course in the first place. The career planning process within the course enabled participants to either plan or take concrete steps towards career planning and also increased confidence with respect to approaching interviews and seeking advice from others. There was a richness to the array of ideas and plans across students, with many innovative ideas that fell outside the usual academic career path. Many interviewees had already taken action prior to course with respect ot their career development. It seems that PhD researchers who sign up to an course in open sciece and open innovation already posses an open, curious and entrepreneurial mindset. Some of the participant quotes are listed below.

> "myIPD [Individual Development Plan] helped me realise the right direction of my own job search through career recommendations"
>
> "Certain skills [from the skills assessment] did not match own personality but I decided to use them for development not only in academia but in business, too. That created a conflict in one way, but it also opened up my eyes to other opportunities and I think that was really important"
>
> "It was a bit of out of scope for third year PhD student, with career development goals being rather set i.e. plan to finish PhD and then to look for postdoc, hopefully one day have own lab and become a PI"
>
> "I thought I had neglected career development thinking, but it proved to be there, simply not formulated"
>
> "Having done this course has enhanced my confidence in terms of doing the interview and stating my ability to do the job"
>
> "The career development plan made me go through step by step, something I had not thought about before."
>
> "I found it quite helpful, putting everything into perspective and seeing where I need to be in like six months, a year, a year and a half".

The tension between academic and non-academic career pathways

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Mostly, participants were open to considering non-academic career paths, and this was done with a sense of enthusiasm by some and perhaps a sense of disappointment by others at the fact that academia may not be able to support their primary career aspirations. It seemed that the course reiterated this unpalatable truth for some. "Networking" became an important theme in this regard.

> "Two things really came out: the honest stuff and about the competition in academia that [the facilitator] said
>
> "[I have a] fear of leaving my core area to go to something generic"
>
> "It was difficult to think outside the box during the career planning activity, but I'm lucky to network with a peer in the course that works at an organization of great interest, able to support my own networking with many people there, so I am leading my own career development"
>
> "I am looking to meet the opportunities of current trends in business (e.g. networking, lab development, etc.) by applying the skills I already possess"
>
> "In the last 3 weeks I have been liaising with a teacher group …I am connected to a research group in the organisation, joining their meetings once a month, and following the chief executive officer's support on engaging with important people to know within this establishment"
>
> "I want to stay in academia for some time, find a postdoc post-PhD completion by trying out networking options with lab groups in Ireland and USA, but haven't started yet due to lot of things going on now and being unsure of when it's the right time to start, maybe now"
>
> "Definitely thinking that only 3% of people starting a PhD get a PI role in the EU, but still being optimistic and excited "
>
> "Being a lecturer in own field in Ireland is very competitive, as there's only one course, so thinking of looking around possibly in UK post-PhD completion, but few positions both in Ireland and UK. I am writing paper(s) at the moment and taking part in this course especially after Christmas feeling stagnant was helpful"
>
> "I do not like networking and a project I'm currently working on might help in that, but I just have to have a plan and encouraging oneself is a good way to go, along with talking with [facilitators] about diverse options, was helpful and reassuring"

Interviewees' career aspirations were primarily value-driven rather than sector-driven:

Motivations for career choices mostly clustered around values such as living a positive, balanced life, sustainability, being a life-long learner, contributing to societal good rather than working for a corporation and being a mentor. Working conditions such as equality and positive interpersonal relationships were also seen to be important. The majority of interviewees also reference their desire to be intellectually stimulated through diverse tasks within their roles, to create new knowledge and to contribute to innovating for the future. The employment sectors that seemed to be most attractive post-PhD degree were dispersed across academia, industry, government/public sector, NGOs, service organisations, research infrastructure, and (or) self-employment, with a particular emphasis on R&D and product development.

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3. Analysis of written reflections through the lens of career development activities during and after the course

3.1 Data Collection

All participants were provided with a participant information sheet to review prior to providing their consent for their written reflective essays to be analysed as part of the research programme aligned to the course. Twenty-five participants provided consent for their reflections to be included. The research assistant accessed the reflective essays and de-identified the text before analysis.

3.2 Data Analysis

The students had been asked specifically to reflect on their plans for career development, and what they offered in this regard was the target of this analysis Thematic analysis (Braun and Clarke, 2006) was used to derive themes from the data.

3.3 Findings

Participants had reframed their PhD experience as a career development opportunity as well as a research training

In their written career plans, participants demonstrated a strong awareness of the manifold opportunities available to them within and outside their universities that they can pursue while undertaking their PhD studies, which appears not to have been so evident for them prior to undertaking the course. They cited skill development, networking, stakeholder engagement, mentorship and peer learning as ways to help them achieve their career goals. They commonly cited their supervisor as a primary mentor in this regard and were thoughtful about existing networks and how to create new ones.

Most participants sought a research-related career

Whether it is academia or industry, participants mostly saw themselves operating withing a research infrastructure—this was mostly academia as a first preference while demonstrating an openness to other options. A small number considered other entrepreneurial possibilities such as setting up their own business e.g in e-commerce. All participants acknowledged various external factors that may influence their career decision now and in the future, demonstrating a pragmatic attitude. Several participants had never previously reflected on their career planning as a structured reflective learning activity, and this was in general a function of where they were at in their PhD.

4. Conclusion

The career development features of the course that seemed to be supportive for the learners were one of the reasons given for such active course participation. These elements included the skill appraisal and associated career mapping, the re-imagine PhD learning activity, the dialogic learning material, the insights provided into academic and industry sectors, the practical interfacing with external organisations during the course, the corresponding group and individual reflections, the job search done in class according to previous interest and skill assessment and the assessment task of setting up an internship. These activities helped to improve the learners' self-confidence and were seen as particularly important and relevant for early year PhD course students. What rendered these activities less beneficial were the condition of having previously explored potential career development pathways, being in the later years of PhD study and when approaching retirement. It appears then that both the career development activities in tandem with the instructional design of

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the course led to concrete learner actions and planned behaviours for future career development. These actions included developing a research and innovation profile on social media, foster public engagement approaches in research, applying for jobs and internships, identifying skills gaps and finding formal and informal ways to address them, international networking, plans for publishing research. While some interviewees were already thinking about career development before the course, albeit in rather vague terms, it appears that overall, participation on the course facilitated and further catalysed their behaviours towards concrete career development actions.

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