

Impact Outlook

- ‘Open Science will be the new way of conducting research by opening up access to research data and results via new digital technologies and collaborative tools’
- ‘A main question for us is to what extent will early-career researchers need to be trained for these practices and what is the role of early-career researchers in the shift to Open Science?’

Open science for early-career researchers

Gareth O’Neill, President, and Eva Hnátková, General Board Member/Coordinator WG Doctoral Training, explain why Open Science is a strategic priority within the European Council of Doctoral Candidates and Junior Researchers (Eurodoc)

From your perspective, in order to maintain Europe’s position as a global research hub, is it essential to support and foster open access to science and research?

GO: The implementation of Open Science is fundamental to the ‘New Vision for Europe’ proposed by the European Commission (EC). Open Science will be the new way of conducting research by opening up access to research data and results via new digital technologies and collaborative tools. Open Science is actually just one policy initiative of a threefold strategy to fundamentally open up research and innovation in Europe. Open Innovation will bring new actors into the innovation process, creating new products, markets and entrepreneurship. Open to the World will develop more international cooperation and science diplomacy, as well as address core societal issues. These initiatives together will indeed position Europe as a global and innovative research hub. Opening up access to research is important for all researchers who rely on the research data and results from other researchers to confirm new developments and discoveries and build upon previous research. This is especially true for academic institutions in lesser developed countries, which may not be able to afford the often high costs for access to research through commercial publishers.

What are the goals of Eurodoc in relation to Open Science and the role it plays? Which Eurodoc Working Groups (WGs) are working on Open Science and what are their main tasks?

GO: Eurodoc supports the concept of Open Science and will ensure that the needs and wishes of early-career researchers (ECRs) are taken into account in the development of Open Science policies. ‘Development’ is the key word here because what exactly Open Science is and how to do it are still being figured out by all major stakeholders. ‘Open Science’ is essentially an umbrella term for various practices such as Open Access, Open Data, Open Methodology, Open Source, Open Peer Review, Open Education, Alternative Metrics and Citizen Science. A main question for us is to what extent will ECRs need to be trained for these practices and what is the role of ECRs in the shift to Open Science? Our WGs on Open Science and on Doctoral Training will address these issues.

EH: Our WGs are one of the driving forces behind Eurodoc. WG members are mostly ECRs from our national associations and experts interested in the topic of the WG. Open Science is a relatively new concept that needs to be further refined and adopted by ECRs. The main goals of WG Open Science are to raise awareness, share information, encourage debate and develop policies on Open Science for ECRs. Doctoral training, on the other hand, is an established academic concept that forms the backbone of the doctoral programme and prepares future researchers for science. The main goals of WG Doctoral Training are to monitor and improve the training of doctoral candidates at institutions in Europe. These two WGs are working closely together to train ECRs for Open Science.

GARETH O'NEILL is a linguist interested in experiential categories in languages. He is President of Eurodoc and an expert on intersectoral mobility and Open Science in the Netherlands and for the European Commission.

EVA HNÁTKOVÁ is a Czech engineering scientist who is interested in improving higher education and particularly doctoral training. She is a General Board Member and coordinator of Working Group on Doctoral Training at Eurodoc.

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Gareth O'Neill



Eva Hnátková

What do you consider to be the key barriers to Open Science for European and international research communities? What new skills are needed to overcome these barriers?

GO: We recently conducted a survey together with the EC on Open Science for researchers, with a focus on Open Access and Open Data. We identified key issues for all researchers and especially for ECRs across Europe. Researchers are generally unaware of what Open Science is and how to do it. Most have not followed training courses on Open Science or used Data Management Plans or metadata in their research. Most are also not being adequately supported at their institutions, with researchers saying that there are no institutional/funding guidelines as well as no general/specialist support for Open Science. Our results show that institutions have not implemented a clear Open Science policy and need to more proactively support the shift to Open Science. Lack of coherent policy on Open Science is not reserved to institutions, but is also apparent at national levels. Most countries in Europe have not yet developed strategic plans to implement Open Science and may not yet consider Open Science as a strategic priority. For the open cultural shift to succeed, Open Science must be encouraged and supported at all levels: by the EC, national governments, academic institutions and the researchers themselves.

EH: Open Science consists of a mix of different practices and we cannot expect that ECRs can and should be trained in all of these practices. Some essential skills that we find important are general knowledge of Open Science and specific knowledge of research integrity, Open Access publishing, research data management and FAIR (Findable Accessible Interoperable Reusable) Open Data, the use of Data Management Plans and metadata, Open Education, and Citizen Science. Such skills training should be offered within an optional Open Science suite of courses that is embedded in the (post)doctoral training programme of ECRs. These courses should furthermore be tied to actual Open Science practice whereby ECRs can learn by training and learn by doing. At a European level, skills training for Open Science should also be embedded in the Innovative

Doctoral Training Principles and in the European Framework for Research Careers. Skills training, however, is not enough. As Gareth says, there also needs to be comprehensive awareness raising, encouragement, planning and support for Open Science and ECRs.

How does Eurodoc contribute to the debate on Open Science? Do Eurodoc members advocate specifically for Open Access and Open Data?

GO: Open Science is one of Eurodoc's strategic priorities. The concept of Open Science is new and we aim to contribute to the development and implementation of Open Science from the perspective of ECRs. We naturally do this in collaboration with our main partners such as the Directorate General for Research and Innovation of the EC, the European University Association, and Science Europe. We also inform Open Science initiatives by taking part in advisory boards such as for the FOSTER Plus project, which aims to develop advanced-level and discipline-specific training materials for Open Science. We further organise conferences and workshops for ECRs on Open Science – indeed, the 2017 Eurodoc Conference was titled 'Open Science: Challenges and Opportunities for Early-Career Researchers'. And we raise awareness on Open Science for ECRs and contribute to the public debate via social media and the higher education and science press.

EH: Eurodoc is a federation of national associations representing ECRs from 32 countries in Europe. Our members are active in Open Science and are developing their own national policies. This is especially the case for Open Access and Open Data, which in a way form the core of Open Science, and which researchers know the most about according to our survey. Our members are involved in national advocacy campaigns, take part in conferences and workshops such as the OpenCon conferences, and invite specialists to give lectures on Open Science at local events for ECRs. As you can see, we aim for a high level of engagement at all levels and do our best to not only open up science but to open up science policy.