Open Science training

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What is Open Science?

Open Science is the practice of science in such a way that others can collaborate and contribute, where research data, lab notes and other research processes are freely available, under terms that enable reuse, redistribution and reproduction of the research and its underlying data and methods.

[FOSTER, Open Science Definition: https://www.fosteropenscience.eu/foster-taxonomy/open-science-definition]

The movement to make scientific research, data and dissemination accessible to all levels of an inquiring society.

[FOSTER, Open Science Definition https://www.fosteropenscience.eu/taxonomy/term/7]
Open Science along the research lifecycle

1. Formulate a Hypothesis
2. Design the Study
3. Run the Study & Collect Data
4. Analyse the Data
5. Report the Study

FOSTER
Opening up the research life cycle

Open Proposals
Share proposals/hypothesis & involve public, e.g. wikis, blogs, social media, academic social networks

Open Science Tools
E.g. notebooks, preregister research proposal, document & share experimental process of trial & error using workflow management systems

Open Data
Search for existing data before generating your own, manage & share research data in the most open format by using versioning control, storage management & meta data; use easily attainable software to allow anyone to reproduce your results

Open Reproducible Research
Document research routines freely accessible, cite Open Access versions of literature & provide data and code citations, acknowledge contributor roles in a publication & make conflicts of interest transparent

Open Access, Dissemination & Outreach
Publish research outputs freely accessible, publish preprints & encourage feedback and Open Peer Review (social media, public debate), e.g. OA journals, OA repositories (also sharing posters & presentations), translate research in world languages

Maximize use, re-use, collaboration & impact
Basic tools

- Digital Object Identifiers (DOIs)
- Rich meta data
- Long-term archiving e-infrastructure

Why Open Science?

“Mostly due to current methods capture and data malpractice, approximately 50% of all research data and experiments is considered not reproducible, and the vast majority (likely over 80%) of data never makes it to a trusted and sustainable repository.”

Source: Realising the European Open Science Cloud, EC DG Research & Innovation 2016
http://ec.europa.eu/research(openscience/pdf/realising_the_european_open_science_cloud_2016.pdf#view=fit&pagemode=none
Benefits of Open Science

• Increasing **efficiency** of research
  • i.e. avoiding duplication of effort & reducing data collection costs

• Promoting scholarly rigor & **quality** of research
  • i.e. providing data available for peer review

• Enhancing **visibility** & scope for engagement
  • across research community
  • new possibilities for citizen science & public engagement

• Enabling researchers to ask & address **new research questions**
  • i.e. aggregate and re-analyse data from wide range of sources

[Source: Open To All? Case studies of openness in Research
http://www.rin.ac.uk/system/files/attachments/NESTA-RIN_Open_Science_V01_0.pdf]
Benefits of Open Science

• Inducing **collaboration & community-building** for the sharing of knowledge and expertise
  • across institutional, national and disciplinary boundaries
  [Source: Open To All? Case studies of openness in Research http://www.rin.ac.uk/system/files/attachments/NESTA-RIN_Open_Science_V01_0.pdf]

• Fostering **inclusivity, participation & application of research**
  • opportunities for society

• Increasing the **economic & social impact** of research

• Complying to funders’ **requirements**
  • e.g. European Commission (OA policy & open research data pilot)
FOSTER - The Project
FOSTER Plus - The Project

EU-funded (2017-19)

- Objectives:
  - Achieve cultural change towards Open Science
  - Raise awareness
  - Foster the practical implementation of Open Science
Open Science Training

offline & online

www.fosteropenscience.eu

The future of science is Open

START YOUR RESEARCH TRAINING NOW

USE FOSTER TO:

- Access Free Courses
  Our free courses have been authored by experts and experienced educators.

- Earn Badges
  Get recognised for taking our courses and follow our learning paths to specialisation.

- Participate in the community
  Attend our live events, become a trainer and be part of our network.
Materials to Re-use

## Access Free Courses

<table>
<thead>
<tr>
<th>What is Open Science?</th>
<th>Best Practice in Open Research</th>
<th>Open Access Publishing</th>
<th>Open Peer Review</th>
<th>Sharing Preprints</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Icon]</td>
<td>![Icon]</td>
<td>![Icon]</td>
<td>![Icon]</td>
<td>![Icon]</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>Data Protection &amp; Ethics</th>
<th>Open Source Software &amp; Workflows</th>
<th>Managing &amp; Sharing Research Data</th>
<th>Open Science &amp; Innovation</th>
<th>Open Licensing</th>
</tr>
</thead>
<tbody>
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<td>![Icon]</td>
<td>![Icon]</td>
<td>![Icon]</td>
<td>![Icon]</td>
</tr>
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[www.fosteropenscience.eu/toolkit](www.fosteropenscience.eu/toolkit)
What is Open Science?
Spanish version available
This introductory course will help you to understand what open science is and why it is something you should care about.

Best Practices
Spanish version available
This course introduces some practical steps for opening up your research practices and how to meet expectations relating to openness from funders, publishers and peers.

Managing and Sharing Research Data
Spanish version available
In this course, you’ll focus on which data you can share and how you can go about doing this most effectively.

OSS and Workflows
Spanish version available
This course introduces Open Source Software (OSS) and workflows as an emerging but critical component of Open Science.

Data Protection and Ethics
Spanish version available
This course helps you to get to grips with responsible data sharing.

Open Licensing
Spanish version available
This course helps you to find the best license for your open research outputs.

Open Access Publishing
Spanish version available
This course will help you become skilled in making your publications openly accessible in line with funders’ requirements and in the wider context of Open Science.

Sharing Preprints
Spanish version available
This course introduces the practice of sharing preprints and helps you to see how it can support your research.

www.fosteropenscience.eu/toolkit
Open Science Courses

Answering burning questions of researchers

Where relevant, discipline specific examples (CRG, GESIS, DARIAH-EU)

Interactive content
(quizzes & badges after each course)
Earn Badges for courses & learning paths

- 5 learning paths
- Effort 3-5 hours
- Complete a set of courses & get a badge

FOLLOW OUR LEARNING PATHS:

The open peer reviewer
The responsible data sharer
The reproducible research practitioner
The open innovator
The open access author
Learning paths

The Reproducible Research Practitioner

The Open Peer Reviewer

The Open Access Author

FOSTER
Introduction

OPR in three minutes

What does Open Peer Review (OPR) mean?

Definition of OPR

Why is OPR important?

Six good reasons

Are you ready for Open Peer Review?

Transparency can be added to peer review through:

- Accessible evaluation reports
- Platforms that allow interaction
- Revealed identities of reviewers

Submit | Show feedback
Training the trainers

- Multiplier effect
- Building a community of trainers

→ Trainer bootcamps

- Barcelona
- Lisbon
- Salamanca
- The Hague
- Belgrade
- Debrecen
- Kaunas
- Riga
- Rio de Janeiro
FOSTER training 2017-2019

- 95 trainings with more than 2500 participants in 22 countries
- 45 webinars with more than 1700 participants
Resources to support trainers community

- Events calendar
- Trainers directory
- Infrastructure to share materials
- Resources

→ Open Science Training Handbook
  - Guide for trainers on how to forward knowledge on Open Science
  - Resource from the community for the community
The Open Science Training Handbook

- Idea: bring experienced trainers together to write a book
- Format: 5-day book sprint
  - FOSTER: writing environment
  - Authors: expertise & skills
- CC Zero licence for simple re-use
- Living book open for contributions & translations

14 experts invited as authors
Open Science Basics

- Open Concepts & Principles
- Open Research Data & Materials
- Open Access to Published Research Results
- Open Research Software & Open Source
- Open Education Resources
- Open Peer Review, Metrics & Evaluation
- Open Licensing & File Formats
- Reproducible Research & Data Analysis

book.fosteropenscience.eu
Open Science Basics

What is it?

Why is it important?

Learning objectives to achieve

Key components: Knowledge & skills

Further resources

book.fosteropenscience.eu
The Open Science Training Handbook

A group of fourteen authors came together in February 2018 at the TIB (German National Library of Science and Technology) in Hannover to create an open, living handbook on Open Science training. High-quality trainings are fundamental when aiming at a cultural change towards the implementation of Open Science principles. Teaching resources provide great support for Open Science instructors and trainers. The Open Science training handbook will be a key resource and a first step towards developing Open Access and Open Science curricula and andragogies. Supporting and connecting an emerging Open Science community that wishes to pass on their knowledge as multipliers, the handbook will enrich training activities and unlock the community’s full potential.
On Learning and Training

How to

• Prepare your workshop
  • Theoretical learning strategies
  • Different audiences
  • Strategies to develop motivation

• Execute your workshop
  • How to design a course
  • How to choose content
  • How to start training

• & reflect on your workshop
  • Aspects to evaluate

Organisational Aspects

• Venue
• Timing & budget
• Equipment & media
• Marketing & advertising strategy
• Registration
• Evaluation
→ Check list
Example training outlines

• 24 exercises:
  • Format, time needed, topic, learning objectives, description, materials needed, level of prior knowledge, how to adapt

• Open Science Café
  • Enable low-threshold discussion and dialogue between different stakeholders

www.fosteropenscience.eu/content/organise-your-own-open-science-cafe
Thank you! Questions?
Facebook: @fosteropenscience
Twitter: @fosterscience
Youtube: FOSTER Open Science

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 741839