FOSTER - The Project (2014 - 2016)

‘Facilitate Open Science Training for European Research’

- Raise awareness about Open Science
- Facilitate Open Science training
  - F2f trainings
  - Online courses
- Creation of the FOSTER portal
Open Science Taxonomy

Definition of Open Science

2000+ training materials, categorized in the FOSTER portal according to the taxonomy

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

Idea

Methodology

Data Collection

Analysis

Publish

Journal article, dissertation, book, source code, etc.

Experiments, interviews, observations, etc.

Numbers, code, text, images, sound records, etc.

Qualitative, quantitative, statistics, processes, documentation etc.
Opening up the research life cycle

**Open Access, Dissemination & Outreach**
Publish research outputs freely accessible, e.g. OA journals, OA repositories (also sharing posters & presentations), Open Peer Review, social media, public debate

**Open Proposals**
E.g. wikis, blogs, social media

**Experiment, interview, observation**

**Open Science Tools, e.g. Notebooks, Preregistration**
Preregister research proposal, document & share experimental process of trial & error, e.g. workflow management systems

**Open Data**
Manage & share research data e.g. versioning control, storage management, meta data

**Maximize use, re-use, collaboration & impact**

**Data Collection**
Numbers, code, text,

**Analysis**
Statistics, processes

**Methodology**

**Publish**

**Open Reproducible Research**
Document research routines freely accessible, e.g. interactive computing

**Idea**
Basic tools

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

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
FOSTER Plus - The Project (2017 - 2019)

‘Fostering the practical implementation of Open Science’

Activities

• **Train researchers** in Open Science with focus on practical implementation (f2f & online)

• Strengthen the **training capacity**
FOSTER Plus resources

Events calendar

www.fosteropenscience.eu

Focus: practical implementation & discipline specific content

New courses

www.fosteropenscience.eu/toolkit
Open Science training capacity

→ ‘train the trainer’ approach & multiplier effect

Open Science

Trainer Bootcamp

Open Science

Training Handbook

3 day workshop for new Open Science trainers

resource to support Open Science trainer community
The Open Science Training Handbook

• Idea: bring experienced Open Science trainers together to write a book
• Organisation of Book Sprint in February 2018, Germany

• August 2017: Call for applications (39 applications)

• Selection based on:
  • Open Science expertise, training experience, scientific background & motivation
  • balance of gender, region, disciplines & expertise

14 experts invited as authors
The Open Science Training Handbook

• Guide on how to forward knowledge on Open Science

• Book Sprint format
  • ensured a finished book in only a few days
  • FOSTER provided writing environment (room, food, tools, moderation, author guide, methods etc.)
The Open Science Training Handbook

• Authors brought
  • time, knowledge, experience, writing skills, motivation & endurance with them

• Within five days: a book of 200 pages was written
The Open Science Training Handbook

Roadmap

- **Writing** the OSTS - Feb. 2018
- **Pre-release** available for comments & suggestions - Feb. 2018
- Discussing & including suggestions by community - March 2018
- Moving the OSTS to Github
- Finalizing everything for version 1.0
- **Release of OSTS 1.0 as Gitbook** - April 2018

- Now:
  - Living handbook open for contributions
  - Complementing the OSTS with webinars
OSTH - Structure

• Introduction
• Open Science Basics
  • Open Concepts & Principles
  • Open Research Data & Materials
  • Open Research Software & Open Source
  • Reproducible Research & Data Analysis
  • Open Access to Published Research Results
  • Open Licensing & File Formats
  • Collaborative Platforms
  • Open Peer Review, Metrics & Evaluation
• Open Science Policies
• Citizen Science
• Open Education Resources
• Open Advocacy
• On Learning & Training
• Organizational Aspects
• Examples & Practical Guidance
• Glossary
• References
• About the Authors & Facilitators
Open Science Training Handbook

Open Science Basics

• What is it?
• Rationale
• Learning objectives
• Key components: Knowledge & skills
• Questions, obstacles, & common misconceptions
• Learning outcomes
• Further reading
Open Science Training Handbook

On Learning and Training

• Training vs. teaching
• Strategies
• Expectations
• Target audiences
• Motivations
• Practical Guidance
• Designing a course
• Advice for before, during and after the training
• Further reading
Open Science Training Handbook

Organizational aspects

- Training format
- Audience, guest speakers, and partners
- Venue
- Timing
- Budget
- Equipment & media
- Marketing & advertising strategy
- Registration
- Communication
- Catering

- Code of conduct
- Certification of attendance
- Signs
- Social Media & notes
- Event closure
  - Venue
  - Debrief
  - Evaluation
  - Dissemination
- Check list
Open Science Training Handbook

Examples & Practical Guidance

- Example training structures
- Types of exercises
- 24 example exercises:
  - Format, time needed
  - Topic
  - Learning objectives
  - Exercise description
  - Materials and tools needed
  - Level of prior knowledge needed
  - Things to bear in mind
  - How to adapt for other purposes
Open Science Training Handbook

• Now available as GitBook
• CC 0 license to enable simple re-use

book.fosteropenscience.eu
Contribute and cite the OSTH

- Comment or contribute directly via Github/Gitbook
- We’d love to hear from you if you are considering a translation!

- Please consider citing the handbook referring to
  - https://book.fosteropenscience.eu/, the most friendly way to read the book (also available as PDF, ePub and Mobi), to comment and to suggest changes, or
  - https://doi.org/10.5281/zenodo.1212496, a citable DOI for an archived dump of the book
Thanks!

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