Living Norway 2020 workshop:

Education and training in FAIR Open science

Vigdis Vandvik

Sehoya Cotner, Dagmar Egelkraut, Aud Halbritter, Anette Havmo, Kelly Lane, Elizabeth Law, Chloe Nater, Erlend Nilsen Christian Strømme, Richard Telford,
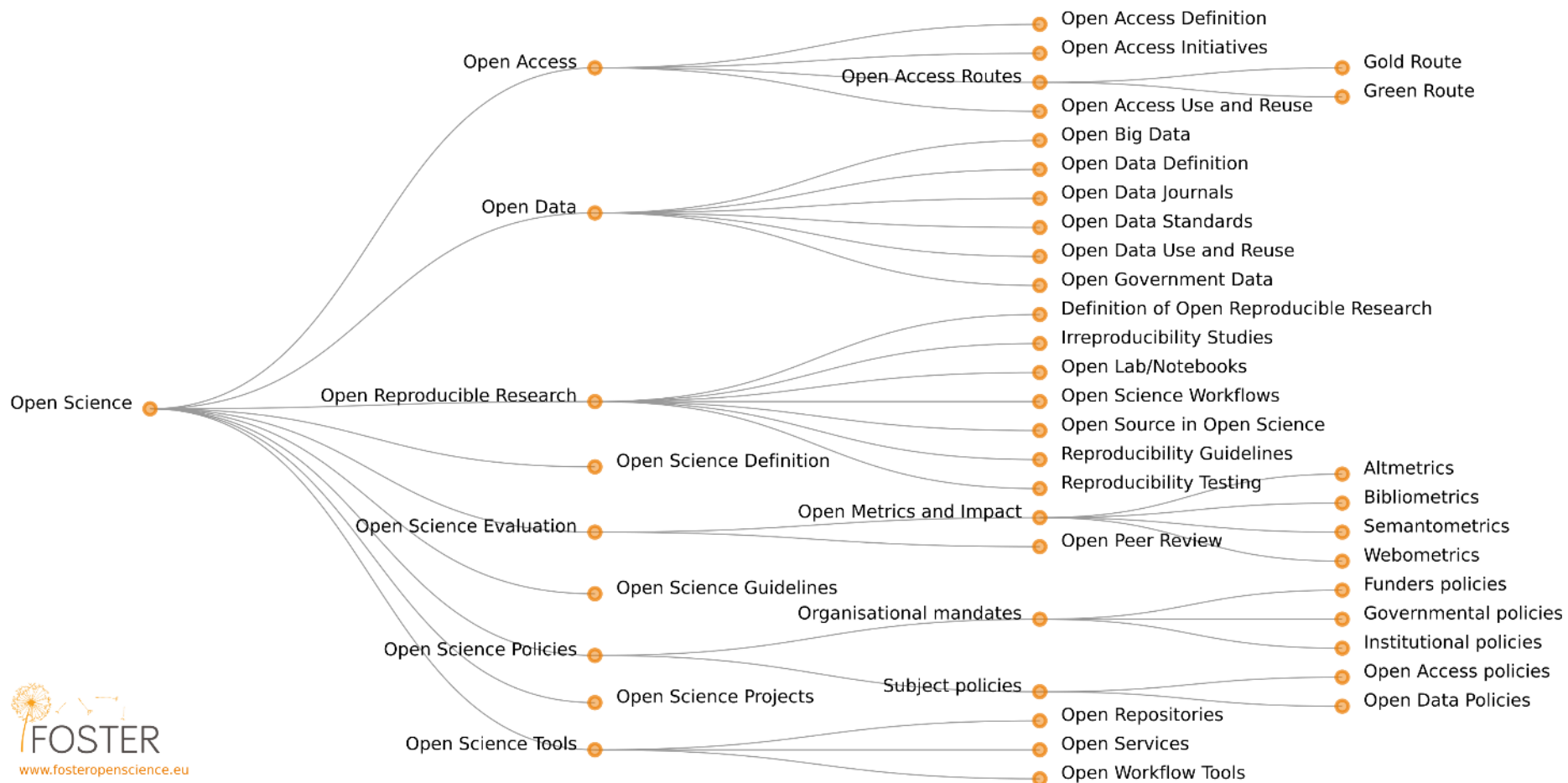
@bioceed
@living_norway

UNIVERSITY OF BERGEN

The Open Science universe expands..

open data

open source

open educational resources

OPEN SCIENCE

open methodology

open access

open peer review

Plan S

(Gallagher et al. Nature EE 2020)

Open Science Taxonomy
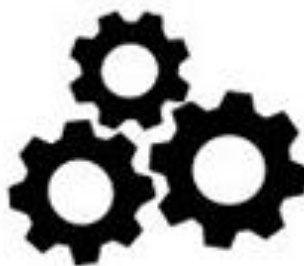
FOSTER
www.fosteropenscience.eu

It's not enough that data are open: they also need to be

F indable   A ccessible   I nteroperable   R eusable

**Making this happpen in reality,
and making use of it in science and society once it has,
requires complex skill sets!**

Elements of the research-teaching nexus

Think like a scientist
- Formulate scientific questions
- Make observations / Read literature
- Develop hypothesis and testable predictions
- Explore ways to test predictions

Use tools & technology like a scientist
- Sampling design
- Use scientific equipment
- Record and Document
- Collect and manage data
- Analyse and statistically test results

Communicate like a scientist
- Illustrate, use figures and tables
- Write scientific text
- Relate to theory/context
- Peer-review
- Critique & consensus

(Sigrunn Eliassen, UIB)

bioCEED
Centre of Excellence in Biology Education

In a FAIR open world…

…students will need new skills

…students should learn using real data

…student's data should be shared

…we should share educational resources

Living Norway 2020 – Ed. edition

- Where are we now?
    - *Mapping the FAIR open education landscape!*
    - Share *experiences* in Open science education
    - Case studies
    - Discussion – lessions learnt

- Where are we going?
    - Draw the FAIR OS education landscape map!
    - Idenitfy opportunities, ways forward
    - Obstacles, tools to tackle them

Full disclosure:
The many fates of my students' data..

MSC SUPERVISORY COMMITTEES (*MAIN SUPERVISOR, [E]EXTERNAL/NON-UiB STUDENT)

2019 — ·	Lasse SF Søgaard*	INCLINE: Resource allocation
2019 — ·	Gunvor Skjelstad*	INCLINE: Floral traits along climate gradients
2018 — ·	Alexander Vågenes*	LandPress: Drought effects on carbon flux in heathlands
2018 — 2018	Joris Schwitter* ·	SeedClim: Seed predation along climate gradients ·
2017 — ·	Linn Vassvik[E]	FINSE: Phenology and pollinator mismatch ·
2017 — 2018	Elisabeth N. Hauge*	LandPress: Traits during ontogeny
2017 — 2018	William Garcia*,	FunCaB: Microbial response to graminoid removal ·
2017 — 2018	Victoria Grape[E],	LandPress: Bryophyte traits in response to drought ·
2017 — 2018	Silje Östmann*,	FINSE: Phenology and pollinator mismatch
2015 — 2018	Jesslyn Tjendra*	FunCaB: Microbial response to graminoid removal ·
2015 — 2017	Ragnhild Gya·*,	FunCaB. Trait and ecosystem services in alpine grasslands
2014 — 2016	Sigrid S. Bruvoll*	Smoke-induced germination in coastal heathland populations
2012 — 2014	Ynghild G. Storhaug*	Pollination an ecosystem service - a case study in Hordaland
2011 — 2014	Berhe Luel*	Fire history in *Calluna* populations in coastal and alpine areas
2011 — 2012	Martha Ramirez*	SEEDCLIM: Seed rain and dispersal along climate gradients
2009 — 2012	Mari Jokerud*	BEGIN/RESAMPLE: N deposition effects on bogs in S Norway ·
2009 — 2010	Sumal Aryal	NOMA: Land-use and biodiversity in the Nepalese Himalayas
2009 — 2010	Astrid Berge*	SEEDCLIM: Dispersal and biodiversity of grassland vegetation
2009 — 2010	Kristoffer Hauge	MATRIX: Moth biodiversity in tropical forest fragments
2009 — 2010	Christine Pötsch	SEEDCLIM: Climate and resource allocation in *Carex* species
2008 — 2010	Therese Kronstad	MATRIX: Butterfly biodiversity in tropical forest fragments
2008 — 2009	Øystein Langaker	RESAMPLE: Beach vegetation at Karmøy SW Norway
2006 — 2008	Kathrin Bochmühl ·	Altitudinal gradients of biodiversity at Svalbard
2006 — 2008	Eva Kittelsen*	VILLSAU: Pasture quality and growth of feral sheep lambs ·
2005 — 2007	Jan Håkon Vikane* ·	Population dynamics of *Arnica montana*
2005 — 2006	Håvard Nilsen* ·	Biodiversity patterns in a fragmented heathland landscape
2001 — 2002	Jarngerdur Gretarsdottir	Revegetation of degraded land on Iceland ·

OPEN/ FAIR'
POTENTIAL
LIKELY LOST

Group discussion 1 (20 min)

- Round of introductions ☺

- Share experiences with FAIR Open science practices that you have encountered in education
  - broadly speaking; in your education, teaching, supervision, ….
  - Both positives (we did it!) and negatives (we missed out on opportuntities…)

- Report back
  - group bulletpoint list (google form)

Group discussion 2 (40 min)

Task 1: Sketch out a figure of how open science links to education (10 mins – please use shapes and arrows)

Task 2: What are the main gaps (hurdles, hinderances & problems) in integrating open science principles into education? (5 mins – please mark with yellow stickynotes)

Task 3: What are some potential solutions, opportunities and ways forward? How can you re-imagine open science practice and education in future? (25 mins – please use blue stickynotes)

Enter 3 best (most important or innovative) suggestions into Summary google document (presented at the summary)