

How to practice Open Science through publication and data sharing

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| Why publish openly?

Open Science benefits for PhD candidates

- Preprints enable rapid sharing of work for grant proposals/job applications
- Sharing open methods, software and data enables other to build upon findings
- Open access enhances visibility, retrievability, audience and usage
- Citation advantage of linking publications to research data*
- Open peer review enables constructive dialogue with other experts in the field
- Open science benefits society and its citizens

*<https://doi.org/10.1371/journal.pone.0230416>

| How to publish openly

Changing the publishing mindset



How to publish research openly



Share work early and openly

Preprints, data etc.

Ask for and welcome community feedback

Update, revise, iterate...



Provide supporting information

Enable others to reproduce work

Provide relevant metadata

Acknowledge authorship contributions



Maximise research objects

Not just 'positive results' are citable

Share information about planning and data collection

Reduce research 'waste'



Ensure results are openly available

Publish in Open Access venues

Share data in trusted repositories

Communicate your work widely

| Case Study: Open Research Europe

Open Research Europe: core principles

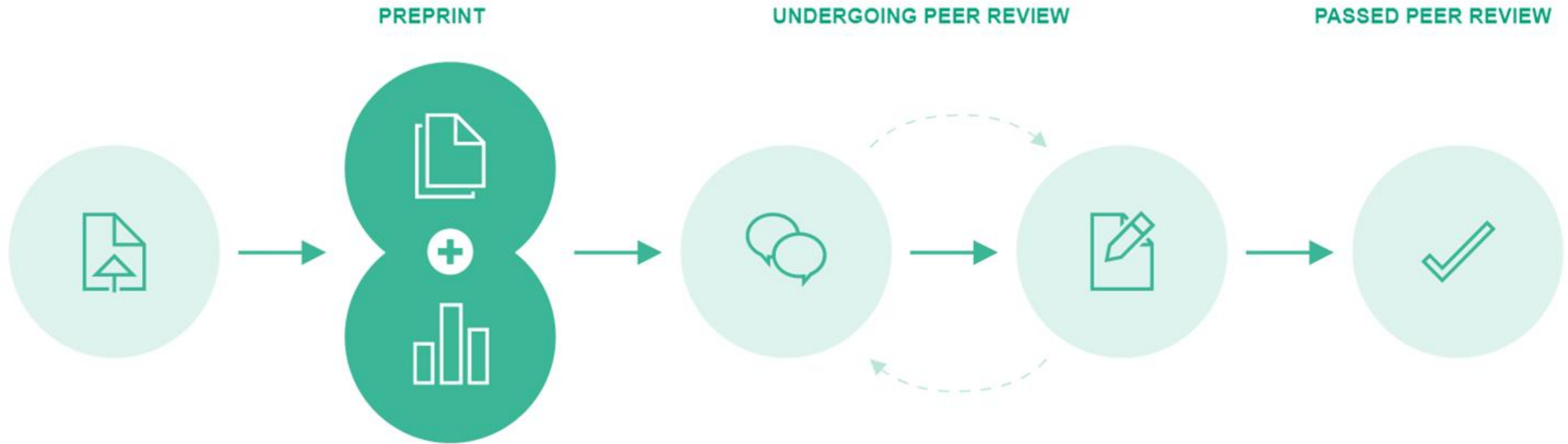
Rapid access to research – All content is accessible in text and data minable formats immediately upon publication. All content and underlying data are given the most open licenses to maximise re-use.

Objective, rigorous editorial checks – acceptance is based on objective subject level criteria, community standards and policies. There are no decisions based perceived impact or importance to provide equity and inclusiveness for authors.

Transparent and accountable publication process – open post-publication peer review with open identities and open reports enable constructive dialogue between author and reviewer and lets readers see the context and development of the work through a transparent process.

Open access to data, software and supporting materials – ORE endorses the FAIR Data Principles, alongside an Open Data policy, as a framework to promote the broadest reuse of research data under an open as possible, closed necessary approach.

Open Research Europe



Maximizing research objects

Review/Systematic review

- Allows researchers to discover and analyze literature in the field
- Provides a summary that can be cited in later articles
- Offers a good introduction to the whole publishing process.

Data Note

- Allows researchers to describe and contextualize their data
- Facilitates sharing and re-use of data by making it discoverable, useable and citable.
- Enables researchers to get credit for the valuable data they generate during their research

Primary Outputs

Writing a research article or monograph at the analysis stage is now much easier:

- Methods are published, vetted, revised and citable
- Data is accessible and citable
- Any relevant analytical tool, like software, is available and citable

Research Article

- Allows researchers to answer one focused research question
- Requires a comprehensive discussion of context, method, results, analysis and significance

Monograph

- Enables researchers to contextualize and analyze their own data at length
- Allows for comparisons across different data sets and with other research projects
- Draws together research from the concept through the analysis stages of the project

Concept

Planning

Data Collection

Analysis

Reflection

Study Protocol

- Allows researchers to develop a new study design
- Researchers can choose a registered report to link analysis with initial protocol (regardless of results)
- Protocols can be adapted by other researchers often become highly cited outputs

Method Article

- Allows researchers to develop a new method or to refine an existing one
- Feedback can be incorporated into later analysis and revision
- Methodologies that can be adapted by other researchers often become highly cited outputs

Brief Report

- Increases visibility of the small, interesting findings that might be outside the scope of the main article
- Enables all research results to be published, shared and cited

Case Study

- Enables researchers to focus on an atypical result or to highlight a particularly interesting subject
- Offers a chance to test methods and analytical tools on a subset of data

Software Tool Article

- Improves discoverability, transparency and reproducibility of algorithms, code, workflow, etc.
- Credits researchers for software packages developed during the course of the research project

Policy Brief

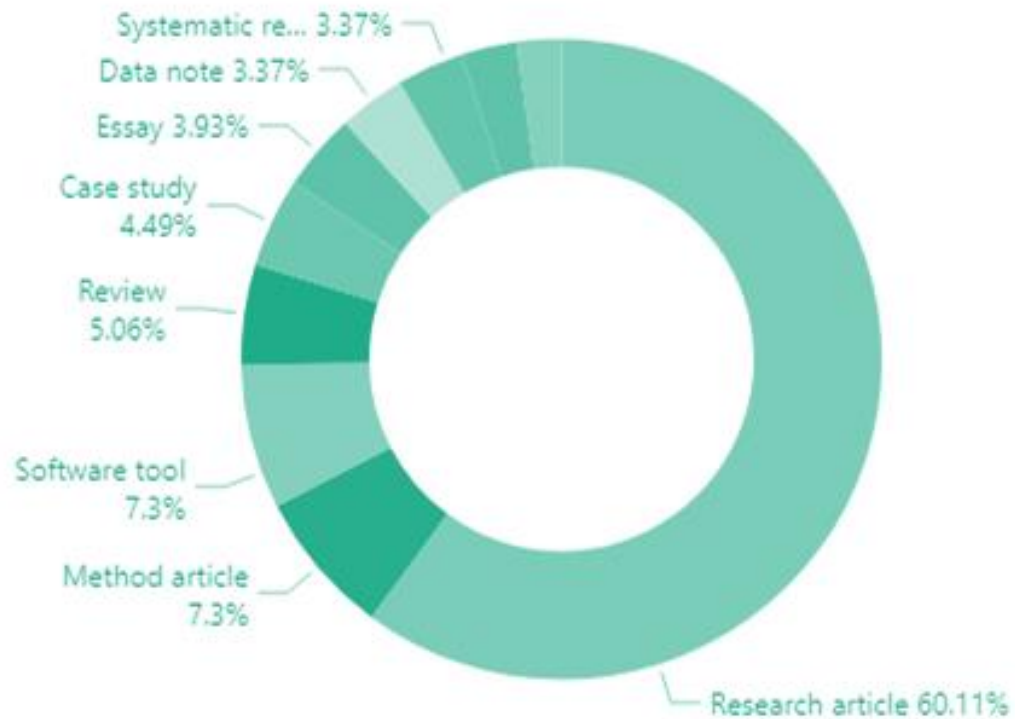
- Translates research results into actionable information for policy makers and other stakeholders
- Improves and extends societal impact of academic research

Opinion/Essay

- Empowers researchers to share their views on a particularly challenging or important subject
- May highlight topics that need further investigation or a different approach

Open Research Europe – snapshot

- Operationalising open science by providing an optional venue for Horizon-funded researchers
- Expand the choice of outputs for researchers to share their ideas.
- Uses an open science publishing model to accelerate the time from discovery to dissemination



9

days from final
submission to being
published

36.5

days from
published preprint
to passing peer
review

**data taken on 12 July 2021*

| Open Science publishing -
sounds simple, right?

It's not so simple!

Open science publishing is making strides, but there are barriers for PhD candidates to be aware of:

- **CREDIT** – there is still the focus on where and not what is published.
- **TRAINING AND EDUCATION** – need to build up open science knowledge and skills
- **CULTURE CHANGE** – transforming the publish or perish mindset.

What we must avoid:

Open Science becoming 'performative' instead of positively impacting research practice.