Open Science Strategy

**Aim: To embrace the open science movement by working towards all our research being open by 2021**

Advantages: Peace of mind, protecting the reputation of the School’s research, role modelling and clear expectations for students, compliance with journal and funder standards, compliance with UoP data management policy.

Background: 1. Public policy to make scientific findings accessible to all; 2. Debate about the reproducibility of research, driving increased rigour and public scrutiny of methods and analyses.

**Key objectives**

Phase 1: completed

* embed teaching on reproducibility and alternatives to null hypothesis significance testing into undergraduate curriculum
* move all undergraduate and Masters teaching on research methods to open source software (R)
* require Masters students to pre-register their project proposals in-house
* make all publications open access via PEARL
* increase understanding and debate on reproducibility through seminar speaker invitations

Phase 2: in progress

Our ambition is for the School’s research to achieve these objectives by 2021 and for funded research projects to work on them now.

* Pre-registration of research that will be published, including data management plans
* Open access to data, stimuli and materials, and papers
* All grant applications to include DMP and costs for archiving data including digitization costs for qualitative, audio, handwritten data.

KPIs: number of pre-registered studies, number of papers including links to data supplements, grant applications with appropriately costed data management.

Recommendations for how to do it

The debate on open science is moving rapidly, along with technology for supporting openness. The following recommendations focus on robust data management practices and using well-established websites that provide digital object identifiers (doi) for archiving data and study protocols, so people will always be able to access your supporting materials.

* **Pre-register** studies you plan to publish using https://aspredicted.org so you can write ‘As predicted (and cite doi from aspredicted.org)…’
* If you are planning a **systematic review** on a health-relatedtopic, pre-register on PROSPERO: <https://www.crd.york.ac.uk/PROSPERO/>. Prospero will warn you if someone else is running a review in the same domain. Register before you start data extraction.
* **Write a data management plan**. This website guides you step by step: [dmponline.dcc.ac.uk](http://dmponline.dcc.ac.uk), as does this paper: <https://rdcu.be/byyA4>. ESRC’s website includes guidance and an example DMP: <https://esrc.ukri.org/files/research/international/esrc-dfid-example-data-management-plan>
* In papers, make clear how you calculated sample size. Make clear which analyses are primary, planned analyses, and which are secondary, exploratory analyses
* Create a **data supplement** which describes your data and includes any scripts used for analysis. Remember to state names and version numbers of the analysis packages you use. RMarkdown is one option for doing this.
* Reserve a DOI for your data supplement on **Zenodo**. Initially this will be under embargo but you can make it public/unrestricted when your paper is published.
* **Cite** your own data supplement DOI in your manuscript and add a link to Zenodo from PEARL.
* Alternatively, upload your data management plan, methods, materials and analysis script to the **Open Science Framework** to keep everything in one place: <https://osf.io/dashboard>. You can also pre-register your study with OSF.
* Keep all the data for your study in **.csv format**, in a form as close to raw data as possible, including excluded subjects.
* Write a **codebook** so someone else can understand your dataset: http://www.emgo.nl/kc/codebook-data-dictionary/
* Get someone else to **check your analysis** before publishing
* Use a **Creative Commons** ‘share alike’ license for stimuli and materials so others can use them without infringing copyright: CC-BY-SA 4.0 International
* Use GNU General Public Licence (GPL) 3.0 for **code**.

**Resources**

The Peer Reviewers’ Openness Initiative has simple guidance and useful links: <https://opennessinitiative.org/guidelines-for-authors/>

The University’s data management policy is here: <https://www.plymouth.ac.uk/uploads/production/document/path/6/6913/Research_Data_Policy.pdf>

University of Plymouth Open Research resources: <https://plymouth.libguides.com/open/directory>

All research needs to abide by GDPR requirements and BPS research ethics guidelines.

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