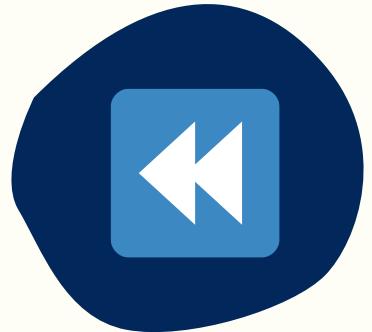


Framework for
Open and
Reproducible
Research
Training



FORRT

Open Day



forrt.org



@FORRTproject

Overview



Time (CET)	Resource	Lead
18:00 - 18:10	Welcome & Introduction	<i>Kelly Lloyd</i> 
18:10 - 18:18	Replications & Reversals Phase I	<i>Helena Hartmann</i> 
18:18 - 18:26	Glossary Phase II	<i>Sam Parsons</i> 
18:26 - 18:34	Impact to Students	<i>Maddi Pownall</i> 
18:34 - 18:42	Pedagogies	<i>Leticia Micheli</i> 

Overview



18:42 - 18:50	Summaries	<i>Thomas Rhys Evans</i>	
18:50 - 18:58	Neurodiversity	<i>Amélie Gourdon- Kanhukamwe</i>	
18:58 - 19:06	Lesson Plans	<i>Maddi Pownall</i>	
19:06 - 19:14	Landscape	<i>Meng Liu</i>	
19:14 - 19:20	Conclusion	<i>Flávio Azevedo</i>	
19:20 - 20:00	Breakout Rooms	Q&A with Project Leads	



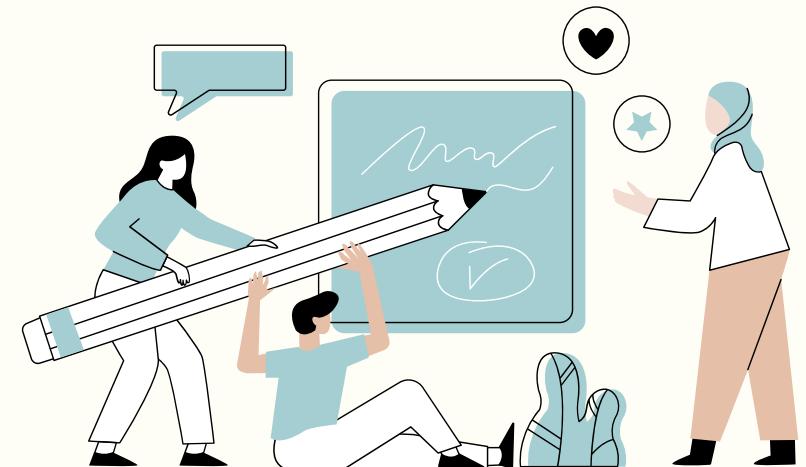
What is FORRT?



FORRT stands for...

Framework for **O**pen and **R**eproducible **R**esearch **T**raining

- Established in 2018 by PhD students
- FORRT is community driven organisation
- Designed by, and envisioned for, educators who want to integrate open science/research practices into their teaching





Why was FORRT created?



The Problem

- While there's been progress in adopting open science practices... the teaching and mentoring of open science practices has received little attention
- As a result, it's common that graduates finish their studies without having heard about *Open Scholarship*



Why was FORRT created?



Solution

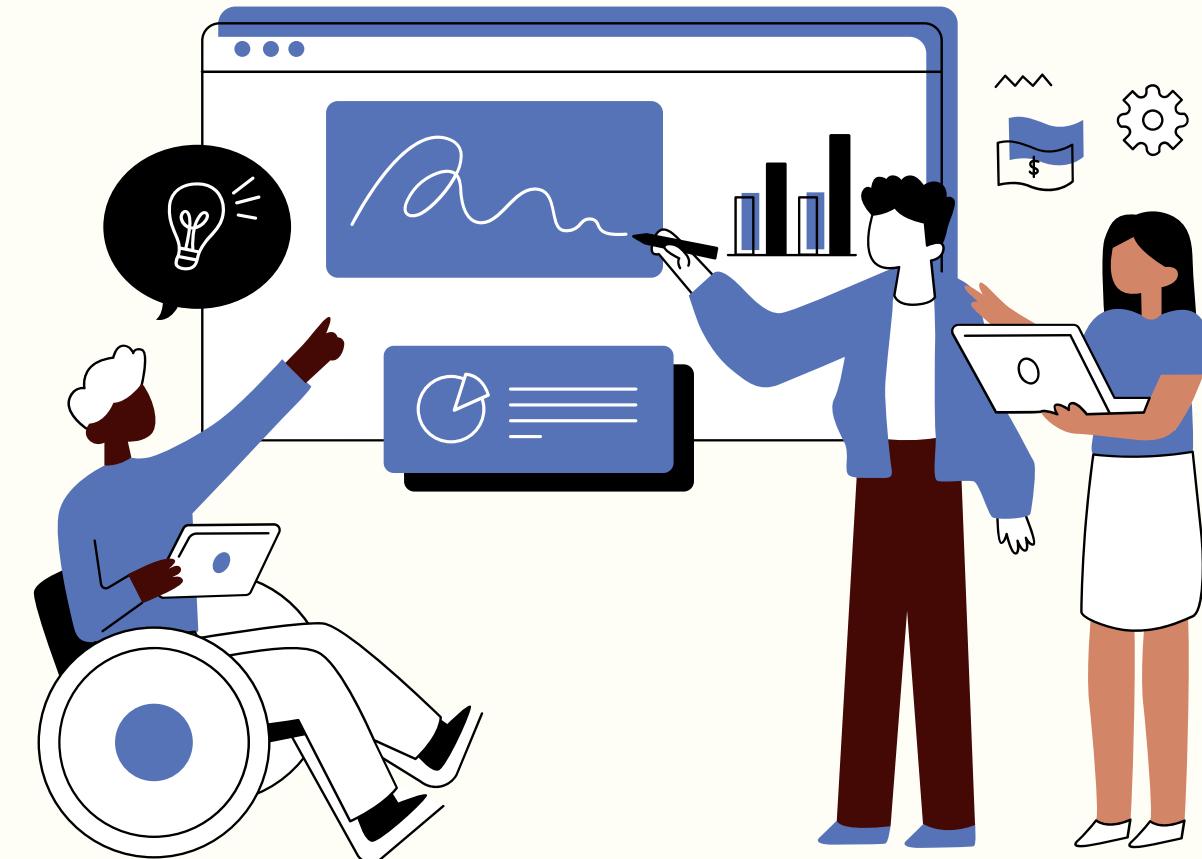
- Need for development of resources for teaching open and reproducible science
- Important to equip next generation of researchers





Aim of FORRT

To provide a pedagogical infrastructure and open educational resources designed to support the teaching and mentoring of open and reproducible science.

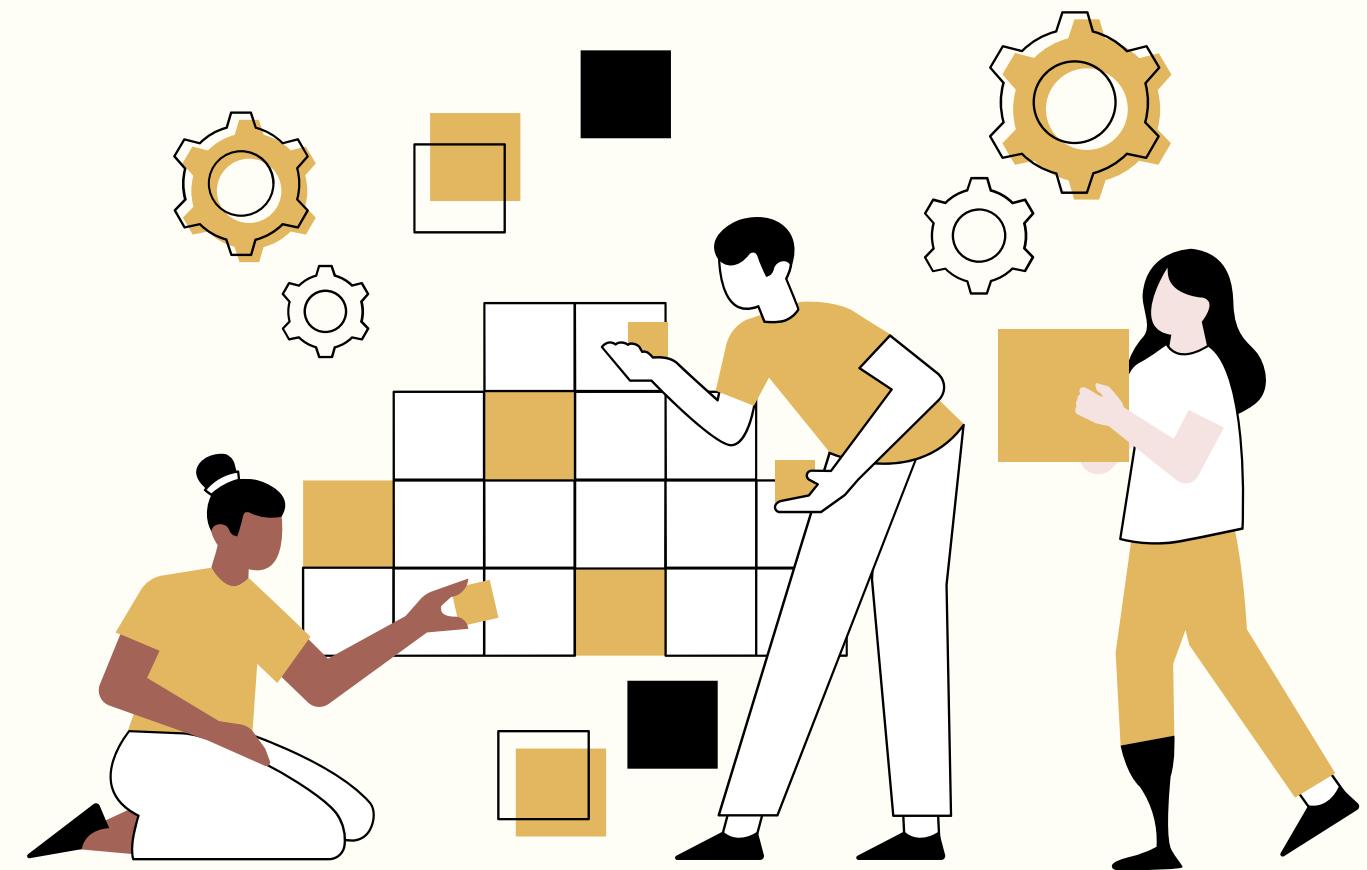




FORRT goals

1

Build together with educators a pathway towards *the incremental adoption of open scholarship practices into higher education*



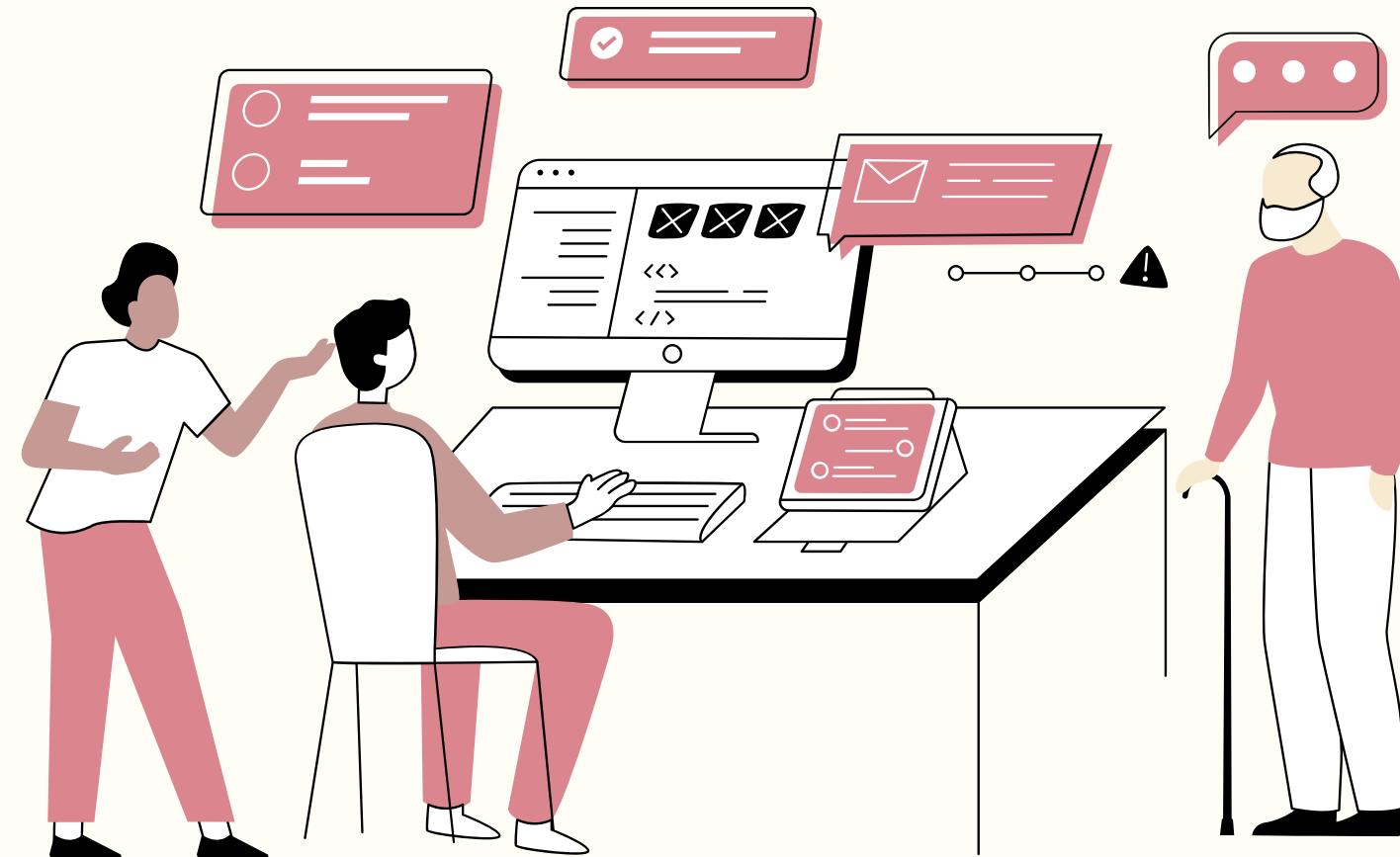


FORRT goals



2

Generate conversation about *ethics and social impact of a higher-education pedagogy* that emphasises openness, epistemic uncertainty and research credibility

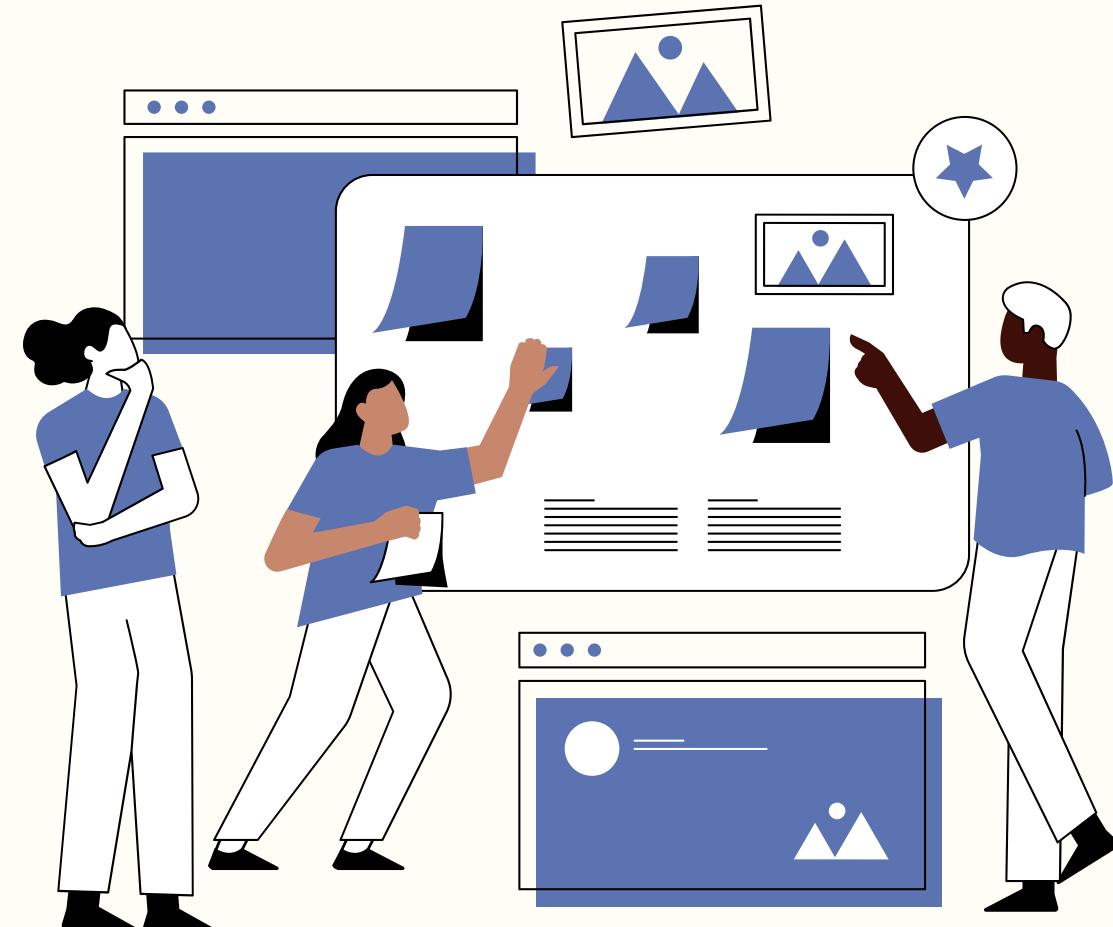




FORRT goals

3

Promote reflection about *perceived importance of different academic activities* and *advocate for greater institutional recognition of educational resources*





Now hear more about all the exciting
FORRT projects/ initiatives from the
resource leads

And find out how you can get involved!

Replications & Reversals in Social Sciences



Framework for
Open and
Reproducible
Research
Training



The Problem

- Replications of previous scientific work are at the core of the Open Scholarship movement
- BUT it can be challenging for scholars and educators to stay up to date with which effects in their field replicate successfully and which do not
- Furthermore, so-called reversal effects are scattered in the literature and not (yet) incorporated into research training/student education



The Solution

- Build a “living”, crowdsourced, curated **list of replicated, not-replicated or reversed effects** in empirical research across all domains of social sciences
- Show exhaustively **what evidence for or against a certain effect exists** so far, including original studies, replication attempts as well as metrics such as effect sizes, citations, etc.
- Give educators a **valuable tool to keep up to date with prevalent effects** in and outside of their fields and to use in their students’ replication projects when deciding which effects to investigate



The Resource

Discipline	Reversal effects	Sub-effects	Started	On g-doc	Contributor Name	Affiliation	Email
Neuroscience	One mind per hemisphere	-	Y	Y			
Neuroscience	Hydrocephaly	-					
Neuroscience	Readiness potential	-					
Neuroscience	Personality on hemisphere dominance	-					
Psychiatry	Admitted sane patients	-					
Parapsychology	Precognition	-					
Evolutionary psychology	Priming	Romantic priming					
Evolutionary psychology	Menstrual cycle on mating	-					
Evolutionary psychology	Large parents and sons	-					
Evolutionary psychology	Strength on egalitarianism	-					
Psychophysiology	Nervous system on political ideology	-					
Behavioural genetics	5-HTLPR on mental health	-					
Behavioural genetics	Candidate genes	-					
Applied Linguistics	Critical period	add reversal effect name here each effect takes one row					
Educational Psychology	Mindsets	add reversal effect name here each effect takes one row					

add discipline names here

Currently we already have over 160 effects already documented and keep adding more every week!

- **Distance priming.** Participants primed with distance compared to closeness produced greater enjoyment of media depicting embarrassment (Study 1), less emotional distress from violent media (Study 2), lower estimates of the number of calories in unhealthy food (Study 3), and weaker reports of emotional attachments to family members and hometowns (Study 4).
 - Status: not replicated
 - Original paper: [Keeping One's Distance: The Influence of Spatial Distance Cues on Affect and Evaluation](#), Williams and Bargh (2008); 4 studies with n's = 73, 42, 59 and 84. [citation=581(GS, October 2021)]
 - Critiques: [Pashler \(2021\)](#) [n=92, citations=185(GS, October 2021)]
 - Original effect size: $\eta^2=.09$, $d=0.76$
 - Replication effect size: Pashler: $\eta_p^2=0.009$
- **Flag priming.** Participants primed by a flag are more likely to be more in conservative positions than those in the control condition.
 - Status: mixed
 - Original paper: [A Single Exposure to the American Flag Shifts Support Toward Republicanism up to 8 Months Later](#) Carter et al. 2011; 2 studies with n = 191 completed three sessions and 71 completed the fourth session; Experiment 2: 70. [citations = 186 (GS, October 2021)]
 - Critique: [Klein et al. 2014](#) [n=6,082 , citations = 957 (GS, October 2021)].
 - Original effect size: $d = 0.50$

 Status Quo

- 1) ~~Proof of Concept Phase (adaptation of original project into FORRT, inclusion of effects mainly from social and cognitive psychology, using Gavin Leech's collection as a basis) → 150 entries finished in 2021.~~
- 2) **Team Science Expansion Phase Across Disciplines** (crowd-sourcing entries and refine existing entries), started at the end of 2021 and planned until the end of **June 2022**. Draft first 'output' piece.
- 3) **Review Phase** (open review to identify inconsistencies, missing data, and errors), planned for the end of 2022. Finish first 'output' piece. End of Phase 1.
- 4) **Regular Update Phases** (dynamically adding new effects), planned for 2023 and beyond.

The great news: Every contribution is kept track of and recognized!



What can you do?

- Edit existing entries** in the gdoc that are incomplete
- Complete entries** that are in the spreadsheet but not in the gdoc yet
- Add new entries** to both the spreadsheet and gdoc
- Contribute to our first planned output piece** which we will submit as a Registered Report to Collabro (more info coming soon on Slack!)





Resources and events

- New?** Read our '[Getting Started](#)' doc first!
- Check out the [working gdoc](#) and matching [spreadsheet](#)!
- Join our **Slack channel:** tinyurl.com/FORRTslack → #team-reversals channel!
- Join our upcoming **Reversals hackathon at SIPS** (together with many other FORRT hackathons)!



The Team

- Helena Hartmann (helena.hartmann@uk-essen.de)*
 - Meng Liu (ml858@cam.ac.uk)
 - Mahmoud Elsherif (mahmoud.medhat.elsherif@gmail.com)
 - Shilaan Alzahawi (shilaan@stanford.edu)
- Alaa Aldoh (a.aldo@sussex.ac.uk)
 - Gavin Leech (cf19331@bristol.ac.uk)
 - Flávio Azevedo (flavio.azevedo@uni-jena.de)*



... and 30+ other amazing people (including YOU?)

*Project administrators and coordinators

Next up in the Open Day

- Sam Parsons talking about the 2nd phase of the fantastic glossary project!

Comment | [Published: 21 February 2022](#)

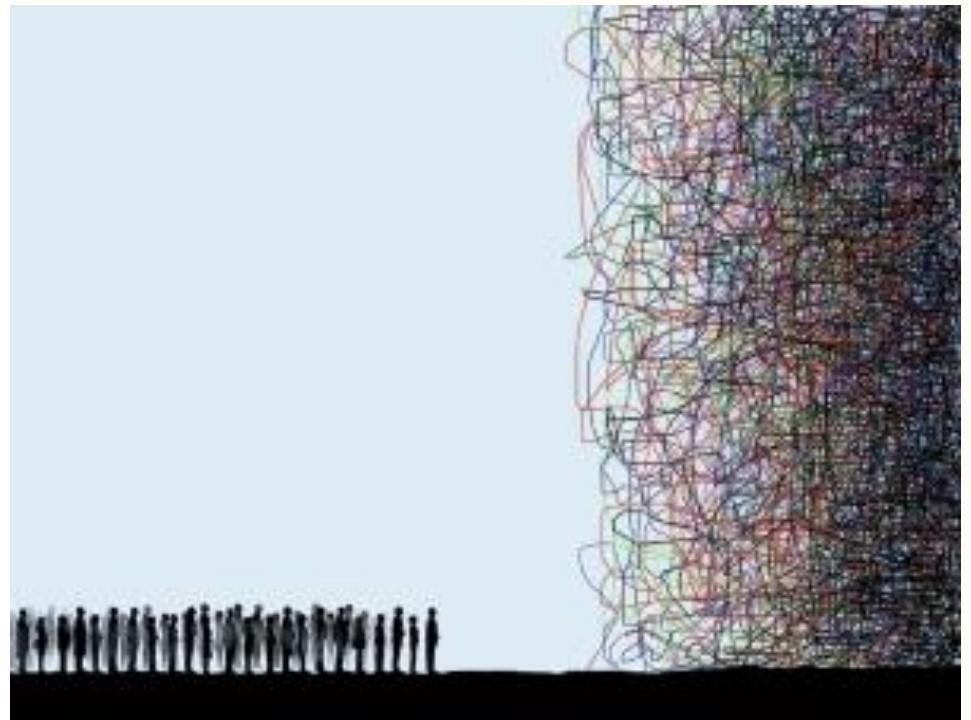
A community-sourced glossary of open scholarship terms

[Sam Parsons](#), [Flávio Azevedo](#) , ... [Balazs Aczel](#) [+ Show authors](#)

[Nature Human Behaviour](#) 6, 312–318 (2022) | [Cite this article](#)

1245 Accesses | 1 Citations | 281 Altmetric | [Metrics](#)

Open scholarship has transformed research, and introduced a host of new terms in the lexicon of researchers. The ‘Framework for Open and Reproducible Research Teaching’ (FORRT) community presents a crowdsourced glossary of open scholarship terms to facilitate education and effective communication between experts and newcomers.



Phase 1 - complete

 SharedIt link

<http://rdcu.be/cHsqM>

 preprint

<osf.io/preprints/metaarxiv/kdqcw>

 full project

<https://forrt.org/glossary/>

A community-sourced glossary of open scholarship terms

Open scholarship has transformed research, and introduced a host of new terms in the lexicon of researchers. The 'Framework for Open and Reproducible Research Teaching' (FORRT) community presents a crowdsourced glossary of open scholarship terms to facilitate education and effective communication between experts and newcomers.

Sam Parsons, Flávio Azevedo, Mahmoud M. Elsherif, Samuel Guay, Owen N. Shahim, Gisela H. Govaart, Emma Norris, Aoife O'Mahony, Adam J. Parker, Ana Todorovic, Charlotte R. Pennington, Elias Garcia-Pelegrin, Aleksandra Lazić, Olly Robertson, Sara L. Middleton, Beatrice Valentini, Joanne McCuaig, Bradley J. Baker, Elizabeth Collins, Adrien A. Fillon, Tina B. Lonsdorf, Michele C. Lim, Norbert Vanek, Marton Kovacs, Timo B. Roettger, Sonia Rishi, Jacob F. Miranda, Matt Jaquière, Suzanne L. K. Stewart, Valeria Agostini, Andrew J. Stewart, Kamil Izidorczak, Sarah Ashcroft-Jones, Helena Hartmann, Madeleine Ingham, Yuki Yamada, Martin R. Vasilev, Filip Dechterenko, Nihan Albayrak-Aydemir, Yu-Fang Yang, Annalise A. LaPlume, Julia K. Wolska, Emma L. Henderson, Mirela Zaneva, Benjamin G. Farrar, Ross Mounce, Tamara Kalandadze, Wanyin Li, Qinyu Xiao, Robert M. Ross, Siu Kit Yeung, Meng Liu, Micah L. Vandegrift, Zoltan Kekecs, Marta K. Topor, Myriam A. Baum, Emily A. Williams, Asma A. Assaneea, Amélie Bret, Aidan G. Cashin, Nick Ballou, Tsvetomira Dumbalska, Bettina M. J. Kern, Claire R. Melia, Beatrix Arendt, Gerald H. Vineyard, Jade S. Pickering, Thomas R. Evans, Catherine Laverty, Eliza A. Woodward, David Moreau, Dominique G. Roche, Eike M. Rinke, Graham Reid, Eduardo Garcia-Garzon, Steven Verheyen, Halil E. Kocalar, Ashley R. Blake, Jamie P. Cockcroft, Leticia Micheli, Brice Beffara Bret, Zoe M. Flack, Barnabas Szaszi, Markus Weinmann, Oscar Lecuona, Birgit Schmidt, William X. Ngiam, Ana Barbosa Mendes, Shannon Francis, Brett J. Gall, Mariella Paul, Connor T. Keating, Magdalena Grose-Hodge, James E. Bartlett, Bethan J. Iley, Lisa Spitzer, Madeleine Pownall, Christopher J. Graham, Tobias Wingen, Jenny Terry, Catia Margarida F. Oliveira, Ryan A. Millager, Kerry J. Fox, Alaa AlDoh, Alexander Hart, Olmo R. van den Akker, Gilad Feldman, Dominik A. Kiersz, Christina Pomareda, Kai Krautter, Ali H. Al-Hoorie and Balazs Aczel

 Open scholarship is an umbrella term that refers to the endeavour to improve openness, integrity,



other terms, such as CARKing, PARKing, or paradata, are less well-known beyond a small circle of researchers. Terms that



New terms and acronyms

HARKing

Last updated on Jul 14, 2021

Definition: A questionable research practice termed ‘Hypothesizing After the Results are Known’ (HARKing). “HARKing is defined as presenting a post hoc hypothesis (i.e., one based on or informed by one’s results) in a research report as if it was, in fact, *a priori*” (Kerr, 1998, p. 196). For example, performing subgroup analyses, finding an effect in one subgroup, and writing the introduction with a ‘hypothesis’ that matches these results.

Related terms: [Analytic Flexibility](#), [Confirmatory analyses](#), [Exploratory data analysis](#), [Fudging](#), [Garden of forking paths](#), [P-hacking](#), [Questionable Research Practices](#) or [Questionable Reporting Practices \(QRPs\)](#)

References: Kerr (1998), & Nosek and Lakens (2014)

Drafted and Reviewed by: Beatrix Arendt, Matt Jaquierey, Charlotte R. Pennington, Martin Vasilev, Flávio Azevedo



Imprecisely used terms

Open Peer Review

Last updated on Jul 13, 2021

Definition: A scholarly review mechanism providing disclosure of any combination of author and referee identities, as well as peer-review reports and editorial decision letters, to one another or publicly at any point during or after the peer review or publication process. It may also refer to the removal of restrictions on who can participate in peer review and the platforms for doing so. Note that ‘open peer review’ has been used interchangeably to refer to any, or all, of the above practices.

Related terms: Non-anonymised peer review, [Open science](#), PRO (peer review openness) initiative, Transparent peer review

Reference: Ross-Hellauer (2017)

Drafted and Reviewed by: Sonia Rishi, Mahmoud Elsherif, Sam Parsons, Charlotte R. Pennington, Yuki Yamada, Flávio Azevedo



Lessons learned

- It's possible to "break" google docs!
- These kinds of projects are huge commitments – but worth it
- The more common the term, the hotter the debates over usage
 - E.g. "direct" vs "indirect" replications
- Crowd-sourcing and consensus building is a powerful tool
 - But, do not underestimate the importance of domain knowledge
- Tracking contributions is super important

FORRT Glossary - Phase 2

- Versioning
- **Improving and expanding the glossary**
 - Adding new terms
 - Improving existing terms
- **Translations**
- Other?



How does embedding open and reproducible science impact student outcomes?

Dr. Madeleine Pownall
@maddi_pow

<https://osf.io/preprints/metaarxiv/9e526>



How to implement open science in teaching

- **Option 1** [level: easy]: Make it as simple as possible to implement

Open educational resources, how-to guides, clear guidelines

- **Option 2** [level: difficult]: Articulate the benefits clearly and customise for local contexts

i.e., what will embedding this approach achieve?



Review of open research impact

- Team Science approach (75 collaborators world-wide) to review and synthesize the evidence that investigates the impact of embedding open and reproducible scholarship
- Systematic review + backward and forward citation searching + grey literature

Search criteria:

1. The paper discusses **open and reproducible scholarship** in the context of Higher Education
2. The paper specifically mentions the **impact** of open and/or reproducible science on **student outcomes**.

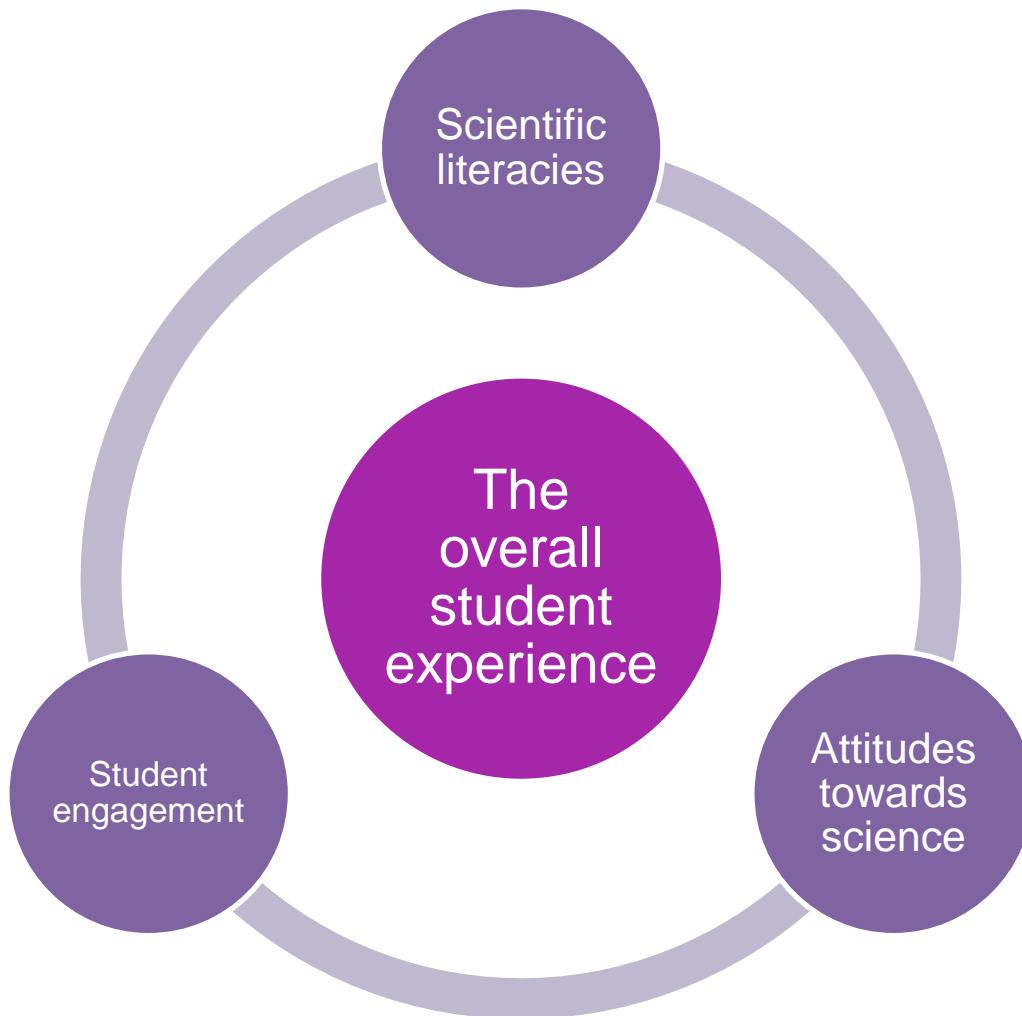
IMPACT OF OPEN SCHOLARSHIP ON STUDENTS

The impact of open and reproducible scholarship on students' scientific literacy, engagement, and attitudes towards science: A review and synthesis of the evidence

Madeleine Pownall^{1*}, Flávio Azevedo^{2*}, Laura M. König³, Hannah R. Slack⁴, Thomas Evans^{5,6}, Zoe Flack⁷, Sandra Grinschgl⁸, Mahmoud M. Elsherif⁹, Katie A. Gilligan-Lee¹⁰, Catia M F. de Oliveira¹¹, Biljana Gjoneska¹², Tamara Kalanadzoe¹³, Katherine Button¹⁴, Sarah Ashcroft-Jones¹⁵, Jenny Terry¹⁶, Nihan Albayrak-Aydemir^{17,18}, Filip Děčtěřenko¹⁹, Shilaan Alzahawi²⁰, Bradley J. Baker²¹, Merle-Marie Pittelkow²², Lydia Riedl²³, Kathleen Schmidt²⁴, Charlotte R. Pennington²⁵, John J. Shaw²⁶, Timo Lueke²⁷, Matthew C. Makel²⁸, Helena Hartmann²⁹, Mirela Zaneva³⁰, Daniel Walker³¹, Steven Verheyen³², Daniel Cox³³, Jennifer Mattschei¹⁷, Tom Gallagher-Mitchell¹⁴, Peter Brannen³⁵, Yanna Weisberg³⁶, Kamil Izydorczak³⁷, Ali H. Al-Hoorie³⁸, Ann-Marie Creaven³⁹, Suzanne L. K. Stewart⁴⁰, Kai Krautter⁴¹, Karen Matvienko-Sikar⁴², Samuel J. Westwood⁴³, Patrícia Arriaga⁴⁴, Meng Liu⁴⁵, Myriam A. Baum⁴⁶, Tobias Wingen⁴⁷, Robert M. Ross⁴⁸, Aoife O'Mahony⁴⁹, Agata Bochnyska⁵⁰, Michelle Jamieson⁵¹, Myrthe Vel Tromp⁵², Siu Kit Yeung⁵³, Martin R. Vasilev⁵⁴, Amélie Gourdon-Kanhukamwe^{55,56}, Leticia Micheli⁵⁷, Markus Konkol⁵⁸, David Moreau⁵⁹, James E. Bartlett⁶⁰, Kait Clark⁶¹, Gwen Brekelmans⁶², Julia Wolska⁶³, Theofilos Gkinopoulos⁶⁴, Samantha L. Tyler⁶⁵, Jan Philipp Röer⁶⁶, Zlatomira G. Ilchovska⁹, Christopher R. Madan⁴, Olly Robertson^{67,68}, Bethan J. Iley⁶⁹, Samuel Guay⁷⁰, Martina Sladekova^{16,7}, Shamu Sadhwani⁷, FORRT⁷¹

1. School of Psychology, University of Leeds, UK
2. Institute of Communication Science, Friedrich Schiller University, Germany
3. Faculty of Life Sciences: Food, Nutrition and Health, University of Bayreuth, Germany
4. School of Psychology, University of Nottingham, UK
5. School of Human Sciences, University of Greenwich
6. Centre for Workforce Development, Institute for Lifecourse Development, University of Greenwich
7. School of Humanities and Social Science, University of Brighton, UK
8. Institute of Psychology, University of Graz, Austria
9. School of Psychology, University of Birmingham, UK
10. School of Psychology, University of Surrey, UK
11. Department of Psychology, University of York
12. Macedonian Academy of Sciences and Arts, North Macedonia
13. Faculty of Teacher Education and Languages, Department of Education, ICT and Learning, Ostfold University College, Norway
14. Department of Psychology, University of Bath, UK
15. Department of Experimental Psychology, University of Oxford, UK
16. School of Psychology, University of Sussex, UK
17. School of Psychology and Counselling, The Open University, UK
18. Department of Psychological and Behavioural Science, London School of Economics and Political Science, UK
19. College of Polytechnics Jihlava, Department of Mathematics, Czech Republic
20. Graduate School of Business, Stanford University, USA
21. Department of Sport and Recreation Management, Temple University, USA
22. Department of Psychology, University of Groningen, the Netherlands

What impact does open and reproducible scholarship have on ‘the student experience’?





Big picture findings

- Embedding open science can improve student's **scientific literacies**, foster **student engagement**, and influence students' **attitudes towards science**

For example:

- Pre-registration aids understanding of statistics ([Blincoe & Buchert, 2020](#))
- Teaching about FAIR (Findability, Accessibility, Interoperability, and Reusability) data can lead to more positive appraisals of open research ([Toelch & Ostwald, 2018](#))
- Replication studies with students can promote hands-on research training ([Jekel et al., 2020](#))
- Reproducing analyses with open data can enhance understanding of research methods ([Smith et al., 2021](#))
- However, the evidence is not (yet) methodologically robust or transparent enough to make more causal claims



Crowd-sourcing open and reproducible science lesson plans and resources

Dr. Madeleine Pownall
@maddi_pow

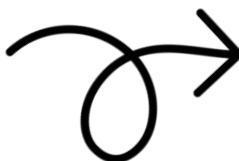
Pownall, M., Azevedo, F., Aldoh, A., Elsherif, M., Vasilev, M., Pennington, C. R., Robertson, O., Tromp, M. V., Liu, M., Makel, M. C., Tonge, N., Moreau, D., Horry, R., Shaw, J., Tzavella, L., McGarrigle, R., Talbot, C., Parsons, S., & FORRT. (2021). Embedding open and reproducible science into teaching: A bank of lesson plans and resources. *Scholarship of Teaching and Learning in Psychology*. Advance online publication. <https://doi.org/10.1037/stl0000307>

<https://osf.io/th254/>



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Open educational resources, how-to guides, clear guidelines
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Articulate the benefits clearly and customise for local contexts
i.e., what will embedding this approach achieve?



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Scholarship of Teaching and Learning in Psychology

<https://doi.org/10.1037/stl0000307>

PEDAGOGICAL POINTS TO PONDER

Embedding Open and Reproducible Science Into Teaching: A Bank of Lesson Plans and Resources

Madeleine Pownall¹, Flavio Azevedo², Alaa Aldoh³, Mahmoud Elsherif⁴, Martin Vasilev⁵, Charlotte R. Pennington⁶, Olly Robertson⁷, Myrthe Vel Tromp⁸, Meng Liu⁹, Matthew C. Makel¹⁰, Natasha Tonge¹¹, David Moreau¹², Ruth Horry¹³, John Shaw¹⁴, Loukia Tzavella¹⁵, Ronan McGarrigle¹⁶, Catherine Talbot⁵, Sam Parsons⁷, and FORRT¹⁷

¹ School of Psychology, University of Leeds

² Institute of Communication Science, Friedrich Schiller University

³ School of Psychology, University of Sussex

⁴ Department of Psychology, University of Birmingham

⁵ Department of Psychology, Bournemouth University

⁶ School of Psychology, Aston University

⁷ Department of Psychiatry and Experimental Psychology, University of Oxford

⁸ Institute of Psychology, Leiden University

⁹ Faculty of Education, University of Cambridge

¹⁰ School of Education, Johns Hopkins University

¹¹ Psychology Department, Notre Dame of Maryland University

¹² School of Psychology and Centre for Brain Research, University of Auckland

¹³ School of Psychology, Swansea University

¹⁴ School of Psychology, De Montfort University

¹⁵ Cardiff University Brain Research Imaging Centre, Cardiff University

¹⁶ Department of Psychology, University of Bradford

¹⁷ Framework for Open and Reproducible Research Training, Germany

Madeleine Pownall <https://orcid.org/0000-0002-3734-8006>

Flavio Azevedo <https://orcid.org/0000-0001-9000-8513>

Alaa Aldoh <https://orcid.org/0000-0003-1988-0661>

Mahmoud Elsherif <https://orcid.org/0000-0002-0540-3998>

Martin Vasilev <https://orcid.org/0000-0003-1944-8828>

Charlotte R. Pennington <https://orcid.org/0000-0002-5259-642X>

Olly Robertson <https://orcid.org/0000-0002-7333-0903>

Myrthe Vel Tromp <https://orcid.org/0000-0002-2076-5348>

Meng Liu <https://orcid.org/0000-0001-8323-2699>

Matthew C. Makel <https://orcid.org/0000-0002-3837-0088>

Natasha Tonge <https://orcid.org/0000-0001-9353-8990-7991>

David Moreau <https://orcid.org/0000-0002-1957-1941>

Ruth Horry <https://orcid.org/0000-0003-3105-3781>

John Shaw <https://orcid.org/0000-0003-3190-6772>Loukia Tzavella <https://orcid.org/0000-0002-1463-9396>Ronan McGarrigle <https://orcid.org/0000-0003-1704-1135>Catherine Talbot <https://orcid.org/0000-0001-9353-8990>Sam Parsons <https://orcid.org/0000-0002-7048-4093>

Correspondence concerning this article should be addressed to Madeleine Pownall, School of Psychology, University of Leeds, 29 Carisbrooke Road, Leeds, West Yorkshire LS16 5RU, United Kingdom. Email: M.V.Pownall@leeds.ac.uk



Overcoming barriers to open science in teaching

- One of the key barriers to embedding open and reproducible science into the curriculum is the **time** and **labour** required
- So, how can we make it easier?
- At the SIPS 2021 Annual Conference, we crowdsourced a bank of lesson plans and resources which all explicitly consider open and reproducible scholarship
- Nine lesson plans on topics such as: “Diversity ad inclusion in Open Science”, “Interpreting effect sizes”, “Research paradigms and epistemology”



Teaching resources

Table of Activities Last edit was seconds ago

File Edit View Insert Format Data Tools Extensions Help

C20 Crib sheet on how to convert your psychoPy experiment to Pavlovia/JS, common errors and how to solve them.

1	Cluster	Title	Description	D	E	F	G	H	I
A	B	C	Learning outcomes	Medium	Delivery	Time	Supporting resources	Reference (if applicable)	
30	Reproducibility and replicability knowledge	Intro and History of Open Science	Paper offering a link to an introductory lecture on the reproducibility crisis in psychology (https://osf.io/mh9pe/). Based on this paper, teachers can create their own lecture	Increase awareness and understanding of the reproducibility crisis	Lecture	Lecture	a few hours to create the lecture, approximately 2 hours for the actual lecture	https://journals.sagepub.com/doi/10.1177/0098628318762900	Chopik WJ, Bremner RH, Defever AM, Keller VN. How (and Whether) to Teach Undergraduates About the Replication Crisis in Psychological Science. <i>Teaching of Psychology</i> . 2018;45(2):158-163. doi:10.1177/0098628318762900
31	All potentially	Hagen Cumulative Science Project	Steps to use replication as a target outcome for final year projects emphasis on using original data first then developing to preregistration and so on with aim for publication outcome	Lots really, open science principle, replication, higher level analysis methods as access to larger data sets to start with with guided analysis in class	Lecture, seminar, one-to-one support	As needed, would work with online and in person	Long, final year strategy	https://journals.sagepub.com/doi/pd/10.1177/1475725719868149	
32	Conceptual and statistical knowledge	Interpreting Confidence Intervals	Teach students about various ways to represent variance in data, such as SD, SE, or confidence intervals. Work out together what method might be best.	Explain how to interpret CI and how to think about a CI	Workshop, interactive. First presentation, later workshop.	Seminar.	30-40 minutes.	https://rpsychologist.com/d3/ci/	
33	Reproducibility and replicability knowledge	"Open Lunch" series at UoL	Recordings and discussion from regular series of talks at the University of Leeds exploring the culture and practice of open and reproducible research in different disciplines	General (preprints, preregistration, open data, barriers to open research)	Blog/video	Reading/viewing	1 hour per lunch session	https://leedsunilibrary.wordpress.com/tag/open-lunch/	
34	Conceptual and statistical knowledge	Multiple choice questions at the end of the paper	You read a series of questions and you answer questions based on the paper	Knowledge learning	multiple choice questions	In-class discussion	30 minutes per set of questions	Journal of Fluency Disorders	
35	Preregistration	Preregistration for Dissertation Projects	Document for students about to start their dissertation getting them to preregister their dissertation ideas ahead of meeting with the supervisor	Learning how to preregister dissertation ideas ahead of meeting the supervisor	Out of class/Within final research methods classes	At-home assignment: preregistering your thesis	a week?	https://osf.io/preprints/metaarxiv/engid/	
36	FORRT	Gilad Feldman	Course materials, course and workshop videos, and workshop materials of courses Gilad Feldman teaches	Depends per course	Lectures/full courses	Syllabus, prerecorded videos	weeks	https://mgt0.org/teaching-courses/	
37	reproducibility and replicability knowledge	Lecture on if to teach about the replication crisis or not, how to avoid turning students away from the area	Lecture session covering replication crisis but emphasis on being a positive	Getting familiar with the replication crisis and main terms of open science, as well as initiatives to improve psychological science. Students also learn how to do good research themselves	Lecture	Lecture	1 hour	https://osf.io/mh9pe/ https://journals.sagepub.com/doi/abs/10.1177/0098628318762900	
38	Conceptual and the importance	Bem's "Feeling the Future" -	Students are introduced to Bem's feeling the future studies as an example of a hypothesis with very low prior plausibility. Use this as a springboard for discussing	Interpretation of p values; understanding the role of					

Explore



Some reflections

- Curation and dissemination of Open Educational Resources should be rewarded
- Embedding these resources and lesson plans requires a level of agency and control that not all educators have over their teaching
- (Mis)perception that use of Open Educational Resources is “cheating” or “playing the system”. Need to apply values of open science into open science pedagogy too – sharing, transparency, collaboration



Ongoing work and other fun initiatives

- Lesson Plans 2.0 at SIPS 2022! Join us!
- Is there **empirical** evidence to suggest that pre-registration impacts student outcomes? ([Pownall, Pennington et al., 2022](#))
 - Longitudinal project
 - Registered Report
 - Outcomes: attitudes towards science, QRPs, scientific careers
- What are the barriers to implementing open scholarship in the curriculum? ([Pownall & Azevedo, 2022](#))





**Thank you for listening! Happy to take
questions in the breakout room**

**Dr. Madeleine Pownall
@maddi_pow**

Pownall, M., Azevedo, F., Aldoh, A., Elsherif, M., Vasilev, M., Pennington, C. R., Robertson, O., Tromp, M. V., Liu, M., Makel, M. C., Tonge, N., Moreau, D., Horry, R., Shaw, J., Tzavella, L., McGarrigle, R., Talbot, C., Parsons, S., & FORRT. (2021). Embedding open and reproducible science into teaching: A bank of lesson plans and resources. *Scholarship of Teaching and Learning in Psychology*. Advance online publication. <https://doi.org/10.1037/stl0000307>

<https://osf.io/th254/>

Framework for
Open and
Reproducible
Research Training



FORRT

PEDAGOGIES





What is it?

FORRT **collects and catalogs** exemplary instances of
principled education in teaching or mentoring of
open and reproducible principles.





What is it?

Pedagogies can include

- ✓ Experiences of adapting courses to incorporate OS principles
- ✓ Reflections on increasing dissemination and recognition of open teaching materials
- ✓ Perspectives on the social and ethical responsibilities of teaching OS



What is it?

Pedagogies have two important elements

- 1) Detailed **description** of real-world instances of teaching and mentoring OS (together with insights and tips from the educators)
- 2) The accompanying **teaching materials** with all the behind the scenes (e.g., assignments, readings...)



Check it out!

<https://forrt.org/pedagogies>

Open and Reproducible Science walks into a classroom

Insights from teaching a course on Psychology's Credibility Revolution

Julia Strand

[Syllabus](#) [Course Materials](#) [Teaser Video](#) [Course technicals](#) [Interview \(pdf\)](#)

Welcome to FORRT's first Pedagogy. And what better way to kickstart this initiative than hosting a researcher and educator who has been widely recognized by her peers for her outstanding course and materials on theory of Open and Reproducible Science called *Psychology's Credibility Revolution?*

FORRT is delighted to partner up with *Julia Strand* for its first Pedagogy!

1. What is your teaching philosophy behind the course *"Psychology's Credibility Revolution?"*

Julia: I'm trying to do two things with this class. The first is to familiarize students with concepts related to the replication crisis and subsequent credibility revolution. The second is to prepare my students to write their senior honors theses. At Carleton, all students complete a capstone project for their major ("comps"). In the Psychology department, the foundation of that comps is the term paper written in a seminar students take in the fall of their senior year. My Credibility Revolution course is one of those seminars. So in this course, I'm balancing teaching content with helping provide students with the tools they need to write their comps. The comps papers from my section are on a research topic of the student's choosing, but written through the lens of something we've discussed. I've had students conduct systematic reviews, trace how findings have replicated (or not) on a particular topic, and evaluate the construct validity of measurement scales, among many others.



Why does it matter?

- 1. Facilitate implementation of OS into teaching/mentoring**
Scholars and educational institutions can use FORRT's pedagogies as an initial template towards the creation of their personalized pedagogies.

- 2. Encourages a change in the academic incentive structure**
It highlights the educator and their educational method and provides a citation format.

- 3. Fosters social justice**
Encourages (in the long run) the democratization of access to open educational materials.



Join the #team-pedagogies

Help us highlight the excellent teaching and mentoring done by our colleagues!

- Identify educators to invite for pedagogies
- Coordinate with educators:
 - Prepare questions about the process which may be helpful for the academic community
 - Collect materials to share
 - Co-write a blog post showcasing the Pedagogy for the FORRT website



Thank you!



<https://forrt.org/pedagogies>



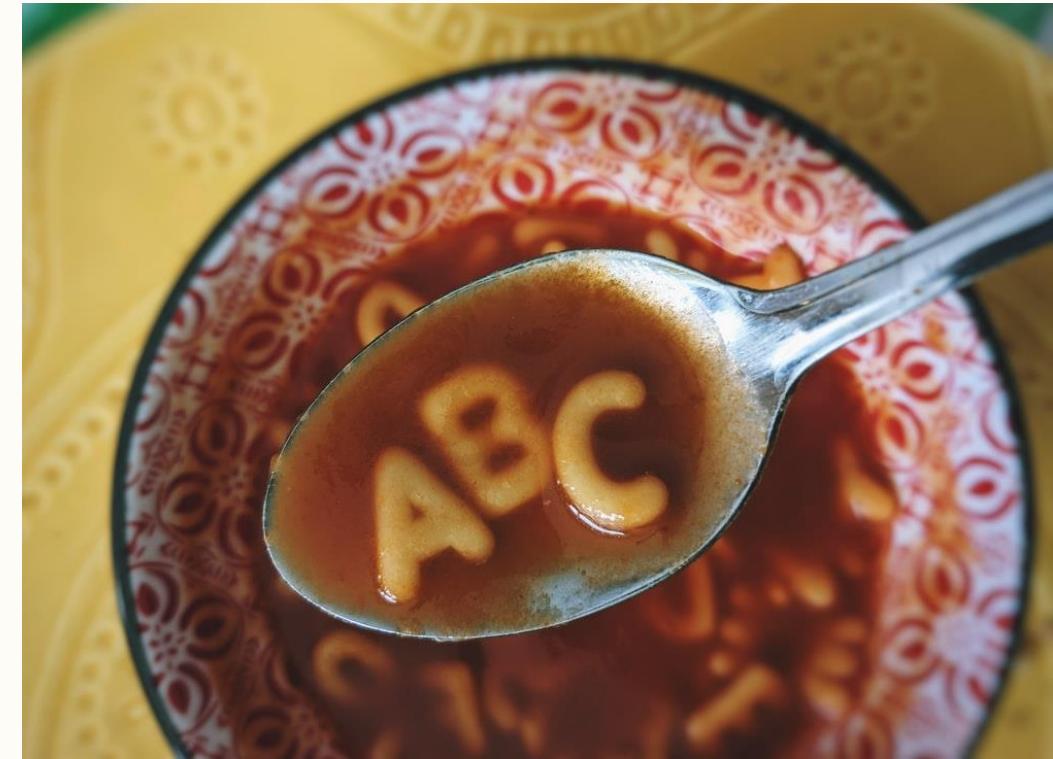
SUMMARIES OF OPEN SCHOLARSHIP LITERATURE

Sorry I'm not the brilliant Prof Tamara Kalandadze!

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The problem

As work continues to balloon, the landscape of open scholarship keeps evolving, and humans continue to set fire to the world in ever creative and cruel ways, it can be challenging to:

- ✓ Get **acquainted** and stay **up to date** with the OS literature
- ✓ **Adopt OS practices** into research, teaching and mentoring



The Summaries Project

Aims to **summarise and synthesise the OS literature**,
facilitating **understanding of the literature and adoption of**
OS practices





What is it?

Over 200 summaries of OS literature including opinion articles, empirical articles, literature reviews...

<https://forrt.org/summaries>

Trust Your Science? Open Your Data and Code
(Stodden, 2011)♦

Main Takeaways:

- Computational results suffer from problems of errors in final published conclusions.
- In order to allow independent replication and reproducible work, release the scripts and data files, and if the researcher uses MATLAB for graphs etc, please provide the graphical user interface.
- The standards for code quality are more precise definitions of verification, validation, and error quantification in scientific computing.
- Research workflow involves changes made to data, including analysis, that affects data interpretation.
- To conclude, open data is a prerequisite for verifiable research.

Quote

“Science has never been about open data per se, but openness is something hard fought and won in the context of reproducibility”
(p. 22).

Abstract

This is a view on the reproducibility of computational sciences by Victoria Stodden. It contains information on the Reproducibility, Replicability, and Repeatability of code created by the other sciences. Stodden also talks about the rising prominence of computational sciences as we are in the digital age and what that means for the future of science and collecting data.

APA Style Reference

Stodden, V. C. (2011). Trust your science? Open your data and code.
<https://doi.org/10.7916/D8CJ8Q0P>

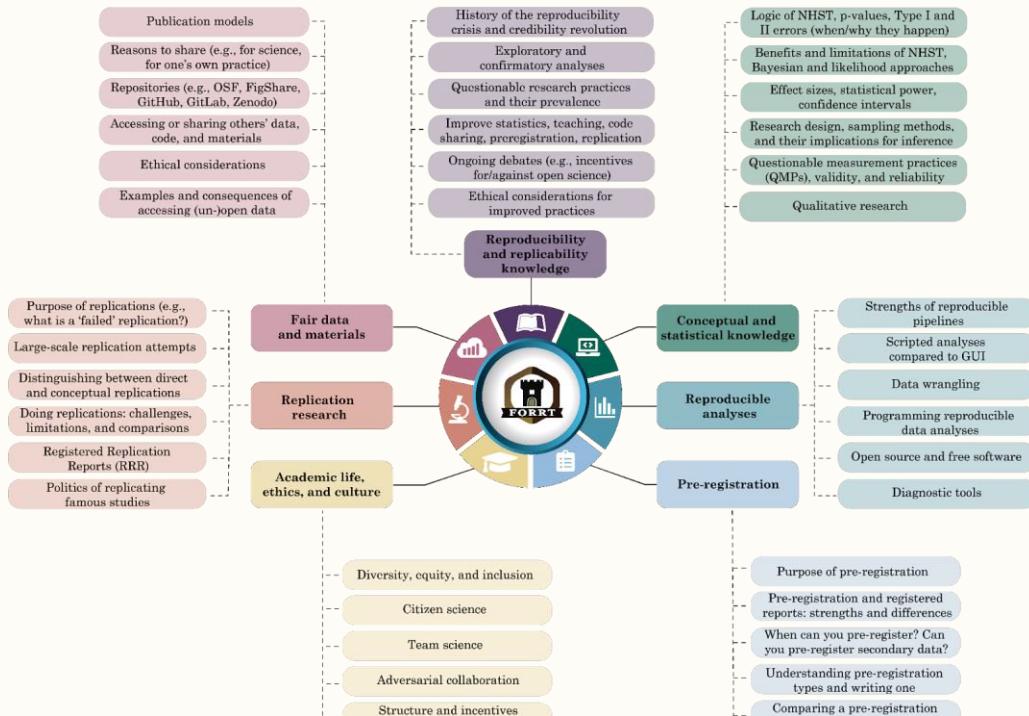
You may also be interested in

- Attitudes Toward Open Science and Public Data Sharing: A Survey Among Members of the German Psychological Society (Abele-Brehm et al., 2019)
- Willingness to Share Research Data Is Related to the Strength of the Evidence and the Quality of Reporting of Statistical Results (Wicherts et al., 2011)



What is it?

To get summaries closer to becoming Findable, Accessible, Interpretable and Reusable, they are categorized according to FORRT's clusters





What is it?

To raise awareness to Diversity, Equity, Inclusion and Accessibility in the OS literature, summaries are divided into:

1. Open and Reproducible Scholarship

2. Diversity, Equity, Inclusion and Accessibility



The process

To ensure the quality of the summaries, each of them is:

- ✓ **Drafted** by one collaborator
- ✓ Independently **reviewed** by two other collaborators
- ✓ **Categorized** according to FORRT's clusters



Join the #team-summaries

Help us keep going! We need help with:

- **Writing** new summaries
- **Revising** existing summaries
- **Categorizing** summaries into FORRT's clusters
- **Better representation of marginalized voices** in our team and resources



Stay tuned!

We are:

- Putting together a **manuscript** describing the OS summaries
- Holding an **unconference at SIPS** to brainstorm about possible ways in which we can derive meta-scientific knowledge from the summaries



This is a community effort...

Thank you!



<https://forrt.org/summaries>

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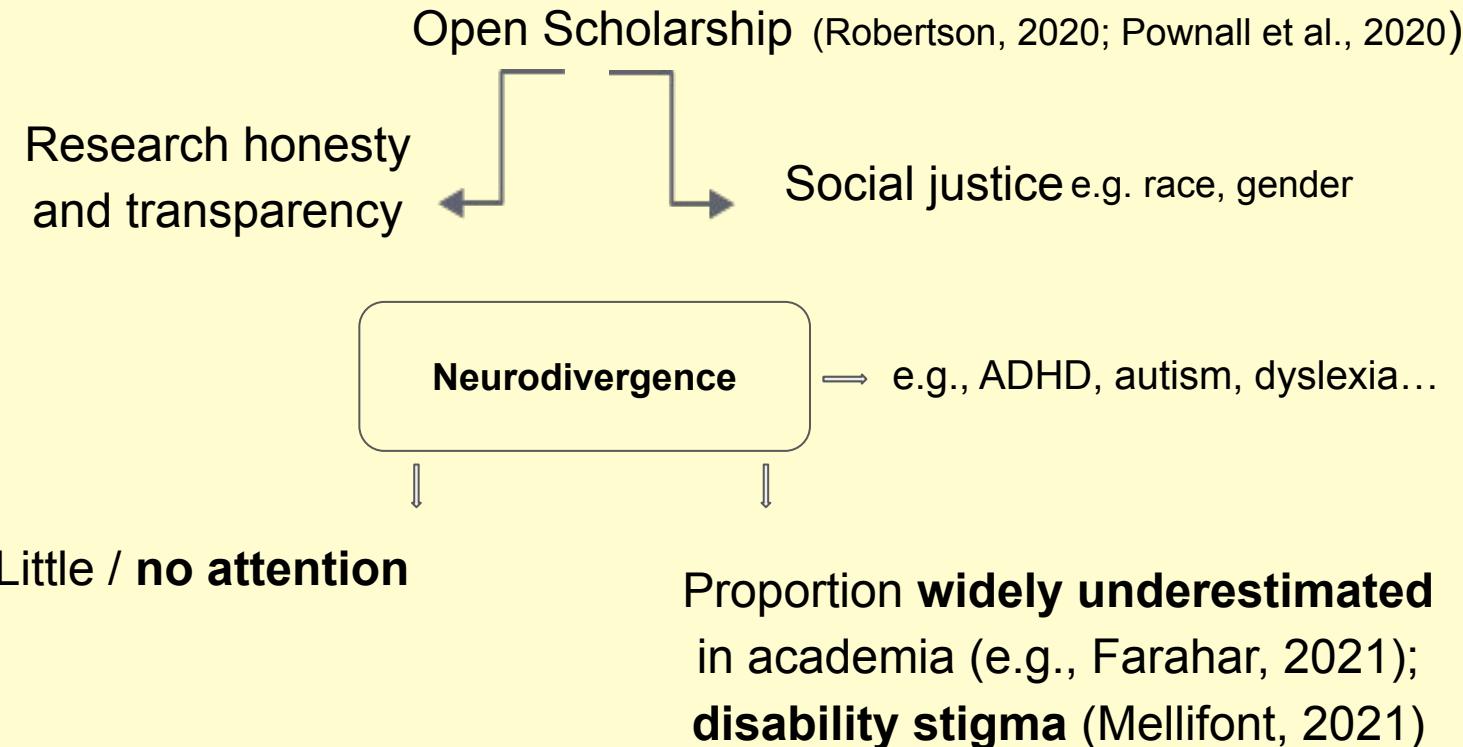
Raising awareness of Neurodiversity
in Academia: Navigating open
scholarship for neurodivergent
researchers

FORRT Open Day 2022

Virtual | May 4, 2022



Background





What is neurodiversity (ND)?

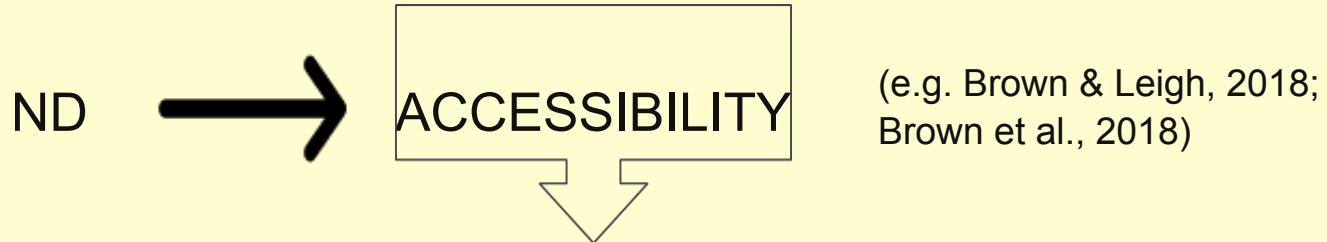
- ❑ Non-pathological variation in the human brain regarding **sociability, learning, attention, mood** and **other** mental functions (Singer, 2017).

- ❑ “We all have individual differences and science has determined that we call them disorders. ”

- ❑ “Imagine we decide to communicate by **drawing** instead of **orthographic print** – I am a **terrible artist**, and I would have a **disorder** if that was the case. ”



Why care for Neurodiversity?



- ❑ Fundamental pillar for the Neurodiversity movement (e.g. Bahlai et al., 2019)
 - Promotes equity
- ❑ Key foundation of open scholarship.
- ❑ How can open scholarship advance / benefit from the neurodiverse movement?



Open Scholarship & ND

- ❑ Discussions on how **open scholarship** can advance the **neurodiverse movement**, but also how it can benefit from it, is scarce.

- ❑ PRIORITY - build community to discuss how the neurodiversity movement can be included in open scholarship (Whitaker & Guest, 2020).

- ❑ Inclusion = promoting **work-life balance**, by **denormalising overwork** and practices that lead to **burnout**.



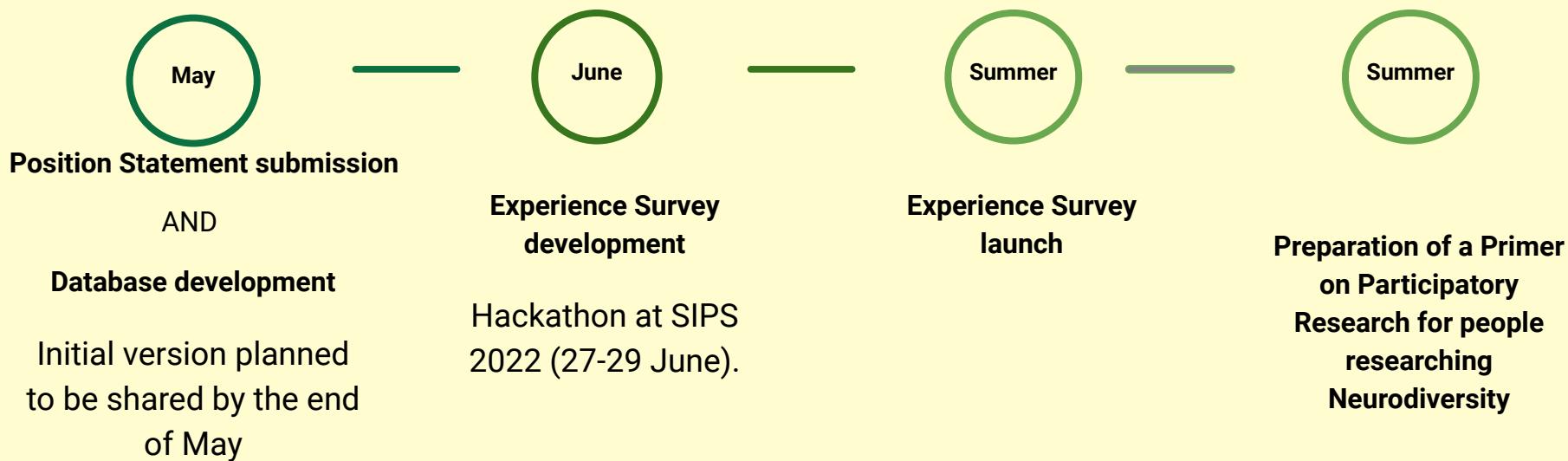
Generated Products



- 1) Educator's Corner piece
 - Currently being expanded into a position statement
- 2) Comprehensive crowd-sourced **database of research by neurodivergent researchers.**
 - To **diversify syllabi to include neurodivergent researchers & counteract the bias** towards neurotypical researchers.
- 3) A **survey** to examine the **experience of neurodivergent academics** and **the bias towards them**
 - To enhance neurodiverse representation.



Timeline





Join us!



<https://forrt.org>



forrtproject@gmail.com



@FORRTproject



<https://forrt.org/publications/>

Presentation Title Here

Presentation Title Here

Presentation Title Here

Mapping the landscape of open scholarship literature across disciplines

Project leads: Meng Liu & Flávio Azevedo





Contents

- Project motivation
- Project aims
- Project plan
- How to join us



Project motivation

- Problem: the solitary and fragmented nature of research
 - Information barriers that hinder progress of science
 - Reinventing the wheel/waste of resources
 - Biased/misleading knowledge
 - Lack of empirical evidence on consensus/disagreement
 - Jingle-jangle fallacy



Project aims

- Create and curate a database of literature about open scholarship across disciplines
 - Allow for easy and customisable queries
- Review and synthesise the literature to map the landscape of the literature
 - Reveal current consensus and disagreement
 - Inform future efforts and discussions
 - Facilitate interdisciplinary knowledge exchange and collaboration



Project plan

- ❑ Initial review
 - ❑ Credit to 1st round review of project aims and motivation:
Martin Vasilev, Olly Robertson, Peter Branney, Bradley Baker, Tamara Kalandadze, Helena Hartmann, Mahmoud Elsherif, Mirela Zaneva, Charlotte Pennington, & Cátia Oliveira.
- ❑ SIPS 2022 hackathon
 - ❑ Tamara Kalandadze as co-lead



Project plan

Building the database



Reviewing the literature

Base literature

- Controlled/systematic search of database of scientific literature

Maintenance and updates

- Submission of literature by the community

Tagging

- Crowd-sourced tagging of the literature

Crowd-sourced literature

- Submission of literature by the community

Report

- Writing up the manuscripts

Review/Synthesis

- Synthesis
- Qual/critical review
- Text mining analysis



Project plan for the initial cycle

- Base literature:
 - Search strategy (search terms, exclusion criteria)
 - Systematic search and retrieval
- Tagging:
 - Initial list of keywords
 - Parallel coding/tagging
 - Reliability check
- Review/synthesis:
 - Analysis
 - Writing
 - Editing



How to join us

- Stay updated:
 - Join FORRT slack
 - Join “#team-literature-landscape” channel
 - Updates on the project will be announced there
- Participate in any or all of the steps
 - We will use tenzing contributorship sheet to keep track of your contribution!
- The project will proceed in steps with meetings at checkpoints (with instructions for tasks provided)