



**Data
Schools**

Open and Responsible (Data) Science Citizenship

Teaching(1): Open Science and Responsible Conduct of
Research

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Open and Responsible (Data) Science Citizenship

● Track 1

- What is Responsible Conduct of Research (RCR)?
- What is Open Science (OS)?
- How do RCR and OS fit together?
- How can I integrate RCR and OS practices into my research?
- How can I start RCR/OS discussions in my home institution?

● Track 2

- How do RCR and OS fit into the broader concept of open and responsible (data) science citizenship?
- How do my daily research activities contribute to my identity as an open and responsible (data) science citizen?
- How can I, as a (data) science citizen, contribute to the broader ethical discussion on data science?
- How do I teach (data) science citizenship?

Starting Discussions Can Be Challenging

- Starting conversations about Open Science and RCR can be challenging
- Physical, social and regulatory contexts influence perceptions of Open Science
- Many low/middle-income country researchers feel that their research context is a barrier to open research practices
- This can lead to the “ideal/real” gap in open research practices



Having Challenges is Normal

- Most concerns are entirely legitimate and should not be dismissed
- Having contextual challenges is normal and does affect ability to be open
- Even in low-resourced environments these challenges are not insurmountable
- Many resources can help address them
- When talking about Open Science you must engage with concerns and offer resources and support



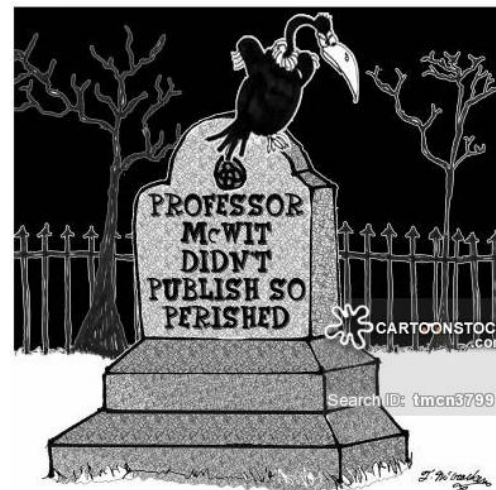
Concerns Often Cluster Around Specific Topics



- Cultural resistance and lack of institutional/peer support
- Resource limitations
- Personal concerns

Cultural Resistance and Lack of Support

- A quick background:
 - Inherited colonial academic systems
 - Historic lack of funding and resources limiting research scope
 - “Parachute research”
- Problems include
 - Lack of institutional support
 - Lack of regulations/guidance
 - Lack of trust

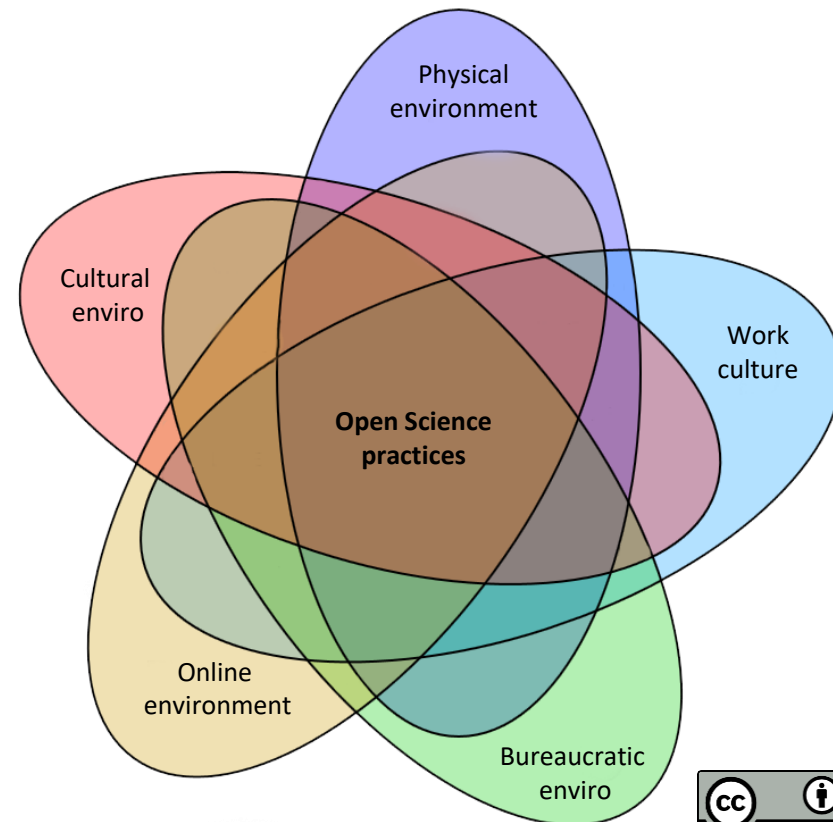


Addressing Cultural Concerns

Challenge	Explanation	Response	Resources
Lack of institutional support	Institutions can be hesitant to roll-out Open Science policies	Open research is not a new concept Open Science (particularly Open Access) has a long history in LMICs. Open Science is increasingly becoming a funding requirement Also highlight the benefits of increased visibility of open research.	LMIC Open Access publishers like SciELO Funding requirements like PlanS Papers demonstrating increased citation of open resources (such as Piwowar)
Concerns about misuse	Getting “scooped” is a concern of most researchers	There are an increasing number of organizations that can provide support even if institutions don't have capacity	Develop data sharing agreements Engage with organizations such as COPE and RDA Make use of policy documents that outline rights and responsibilities
Mistrust in the re-use of LMIC data	There is an historic legacy of mistrust regarding the re-use of LMIC data	The ownership, control and re-use of LMIC data is increasingly taken very seriously and is the subject of considerable policy development	CARE principles for indigenous knowledge Funders such as Wellcome Trust have special support for LMIC researchers Data sharing agreements protect LMIC data

Infrastructural Challenges

- Many institutions struggle with legacies of low-resourcing
- Just because resources are online doesn't mean they are accessible
- Strategic resource distribution often means that OS activities are under-funded
 - Lack of finances to fund Open Science practices
 - Lack of ICT infrastructures
 - Lack of technical support
 - Lack of guidance



Addressing Lack of Resources

Challenge	Explanation	Response	Resources
Lack of funds	Lack of funds to pay for APCs in Open Access journals is a common complaint	Many journals have APC waivers for LMIC researchers	It is good to talk to the journal editor if you cannot see an explicit APC waiver on the journal website
Lack of hardware/software	Many institutions do not provide adequate hardware/software for open research practices	There are a lot of free tools available online to enhance open research practices Software companies are often willing to offer discounts to LMIC researchers on request	Resources such as 101 Innovations highlight open science tools (101innovations.wordpress.com) There are range of open repositories, such as Zenodo, available for use Range of free/open source software
Lack of data and articles	Many LMIC researchers feel that they do not have adequate access to published papers and datasets	There are a range of initiatives, such as that enhance access to published papers for LMICs. These must be accessed via the library portal.	Research4Life provides considerable access to papers https://openaccessbutton.org/ links to open versions of papers Re3Data lists open databases

Addressing Lack of Resources (2)

Challenge	Explanation	Response	Resources
Lack of training	Lack of training opportunities for Open Science, RCR and data science in LMICs	There are a range of international organizations that offer training	MOOCs such as Open Science MOOC The Carpentries Open communities/forums such as R Studio Community NGOs such as AuthorAID
Lack of support	LMIC researchers often feel unsupported in their research and Open Science activities	There are a range of international organizations that offer peer support	NGOs such as AuthorAID/INASP International organisations such as CODATA, RDA, Global Health Network, Global Young Academy Peer communities such as Mendeley network, ResearchGate,

Personal Concerns

- As researchers we have concerns about implementing some Open Science practices
- These concerns are legitimate, and often relate to cultural and regulatory challenges
 - Concerns about being scooped
 - Concerns about scrutiny of data and methods
 - Misuse of data
 - Unintended harms

REASONS WHY RESEARCHERS ARE HESITANT TO SHARE THEIR DATA

- 42% Intellectual property or confidentiality issues
- 36% My funder/institution does not require data sharing
- 26% I am concerned that my research will be scooped
- 26% I am concerned about misinterpretation or misuse
- 23% Ethical concerns
- 22% I am concerned about being given proper citation credit or attribution
- 21% I did not know where to share my data
- 20% Insufficient time and/or resources
- 16% I did not know how to share my data
- 12% I don't think it is my responsibility
- 12% I did not consider the data to be relevant
- 11% Lack of funding
- 7% Other

Addressing Personal Concerns

Challenge	Explanation	Response	Resources
Lack of clarity on rights/responsibilities	If openness is a new topic, researchers can feel that they do not understand their rights/responsibilities	There are a range of organizations, tools and informational resources that researchers can consult	Licenses such as Creative Commons and GPL Organizations such as COPE Codes of conduct such as ACM MOOCs such as Open Science MOOC
Being open is scary	Researchers often feel under pressure to make all aspects of their research open immediately	Openness is a continuum and a life-long journey. Researchers should start with something they feel comfortable with and extend from there. Researchers should recognise the benefits of data management etc to their own research	
Managing risk	Researchers are concerned about where and how to share	There are a range of organizations that set standards for trusted Open Science tools	Re3Data is a registry of research data repositories Disciplinary communities can provide insights into what resources are trusted/preferred

You Can Help ...

- More positive examples of LMIC researchers engaging with Open Science are needed
 - Need for more positive examples to dispel “urban myths” and lurking ghosts
 - Need enthusiastic champions and mentors
 - Effective personal networks
- LMIC researchers need to engage with international communities to ensure that Open Science infrastructures being developed suit their particular needs
- Need more discussion about LMIC researchers’ concerns in international forums

Openness Is A Lifelong Journey



Publish Preprints



FAIRify data



Make code available



Publish Lab-Notebooks



Use version control



Preregister your project



Do science communication



Data Schools

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