



Principles & Practices of Open Research

An online module for
undergraduate and Masters
students

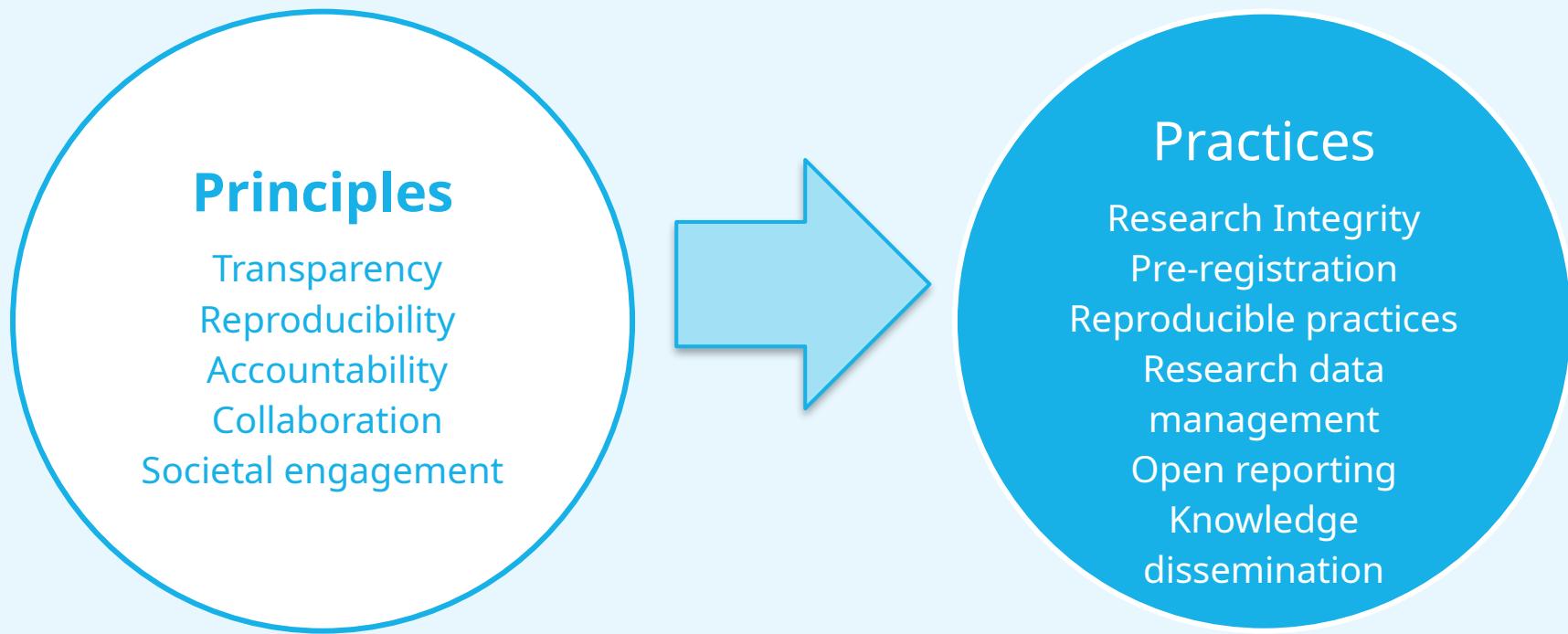
What does Open Research Involve?

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Open Research Practices

Now that you have a sense of what open research is about in terms of the principles of open research, we will provide an introduction to using open research practices



Open Research Practices

Open research practices, or methods are relevant at all stages of the research process, including:

- Research planning
- Data collection
- Data analysis
- Writing up and publishing findings
- Disseminating and sharing your research





Each of the open research practices introduced here are discussed in the next sections

Research Integrity



Guiding Principles of Research Integrity

Research integrity involves making honest and responsible decisions at all stages of the research cycle. It prioritises:

Reliability

Ensuring quality of research at all stages of the research process

Honesty

Developing, conducting, sharing & engaging with research in fair, transparent ways

Respect

For research participants, colleagues, society, culture, and the environment

Accountability

For the research, its management, and for wider impacts

Research Integrity



1 It reduces the likelihood of research misconduct

2 It ensures the validity of research results

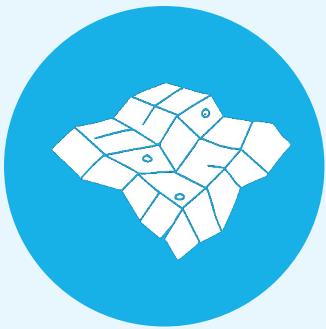
3 It facilitates trust between researchers

4 It promotes trust in data and research expertise

Pre-registration



Pre-registration



A pre-registration is a record of research processes



It is created and shared before data are collected or become accessible



It is a time-stamped record of decisions about study design, methods and analysis



Pre-registration documents should be publicly available



There are dedicated repositories to make pre-registrations available

Pre-registration

Why is pre-registration important?

1

It encourages researchers to identify the goals of their project before collecting any data

2

It creates accountability in research

3

It discourages researchers from conducting “after-the-fact analyses” to find significant, novel and/or exciting results

4

It makes research findings easier to find

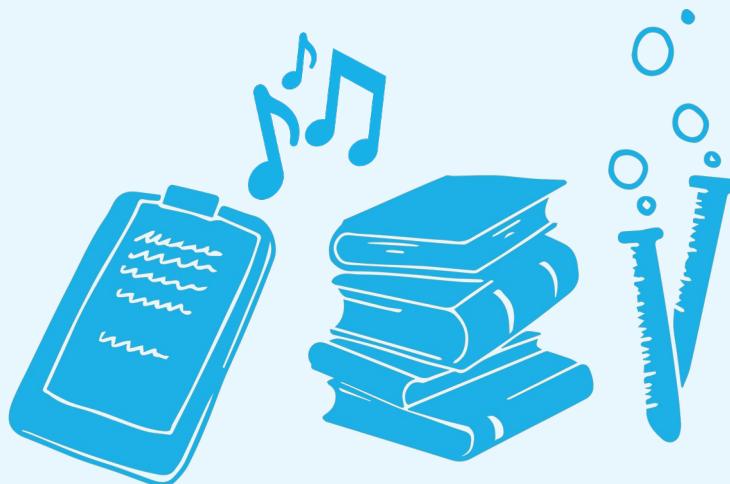
Data Management



Data Management

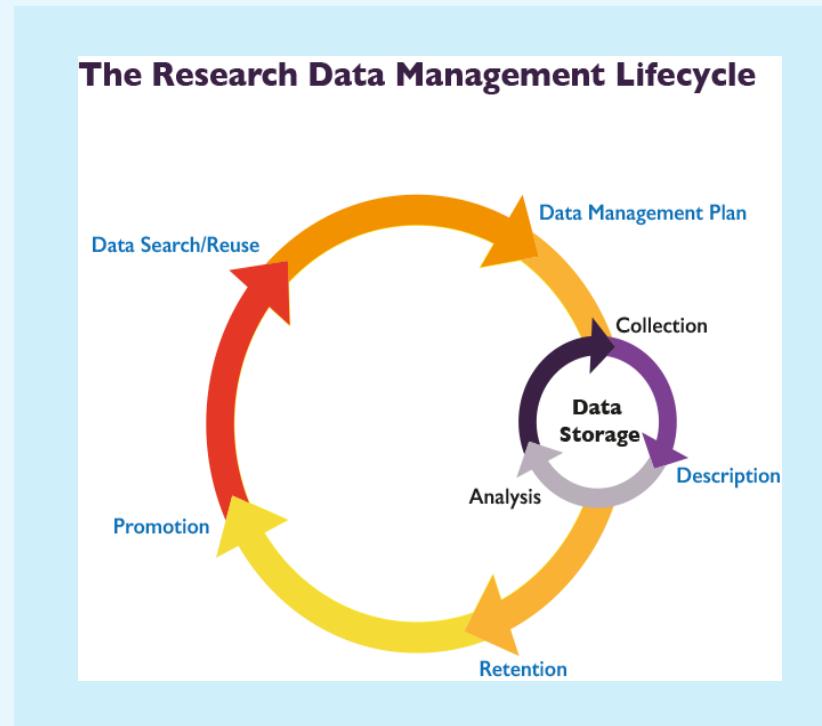
Data is all information collected, observed, recorded or created throughout the research process

It can include spreadsheets, videos, audios, notes, diaries, images



Data Management

Research Data Management (RDM) is the organisation, storage and preservation of research data during active research and post-project.



Data Management



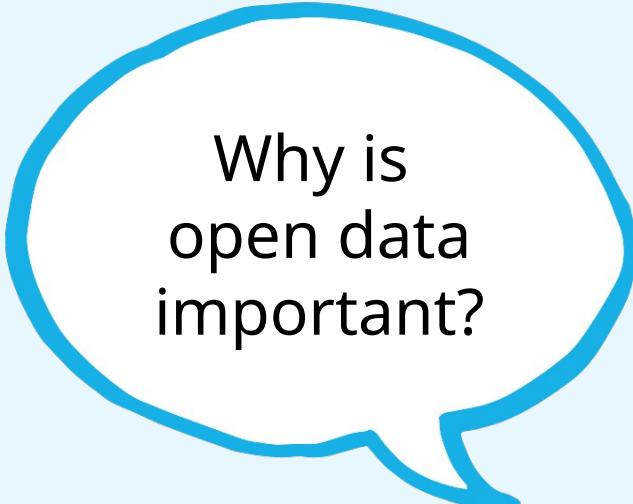
Data Management



Why is data management important?

- 1 It helps you keep track of your own work
- 2 It protects against data loss
- 3 It increases research efficiency
- 4 It minimises errors and data omission
- 5 There are funding and publishing incentives related to data management
- 6 There are institutional and/or legal data management requirements

Data Management



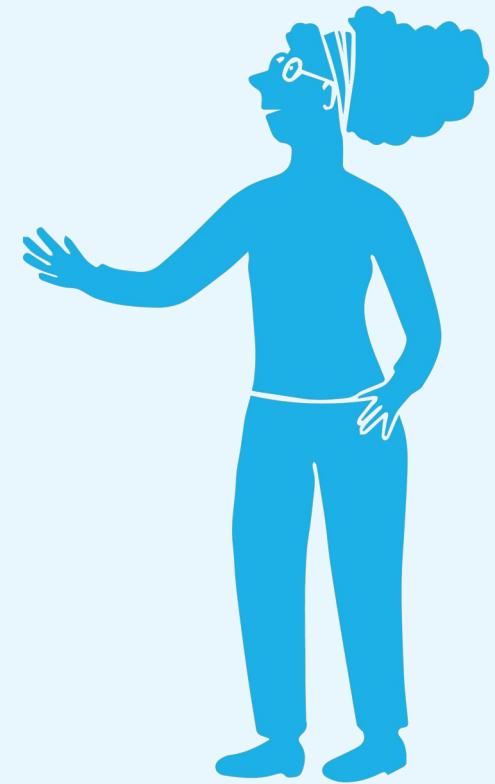
Why is
open data
important?



Remember that
open data is data
made publicly
available

- 1 It enhances accountability
- 2 It enhances transparency
- 3 It enhances reproducibility
- 4 It facilitates revisiting and building on existing data
- 5 It facilitates better and stronger collaborations
- 6 It is better value for the public money that funds much research

Reproducible Research Practices



Reproducible Research Practices

Reproducibility means that research is conducted and reported in such a way that another researcher could reach the same result and conclusions using the same methods



Reproducible Research Practices

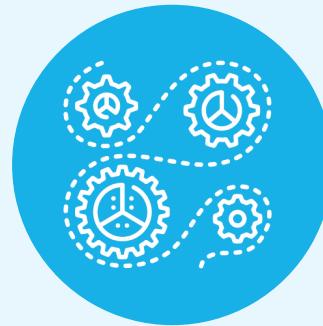
Reproducible research involves:



Sharing data and
research
procedures

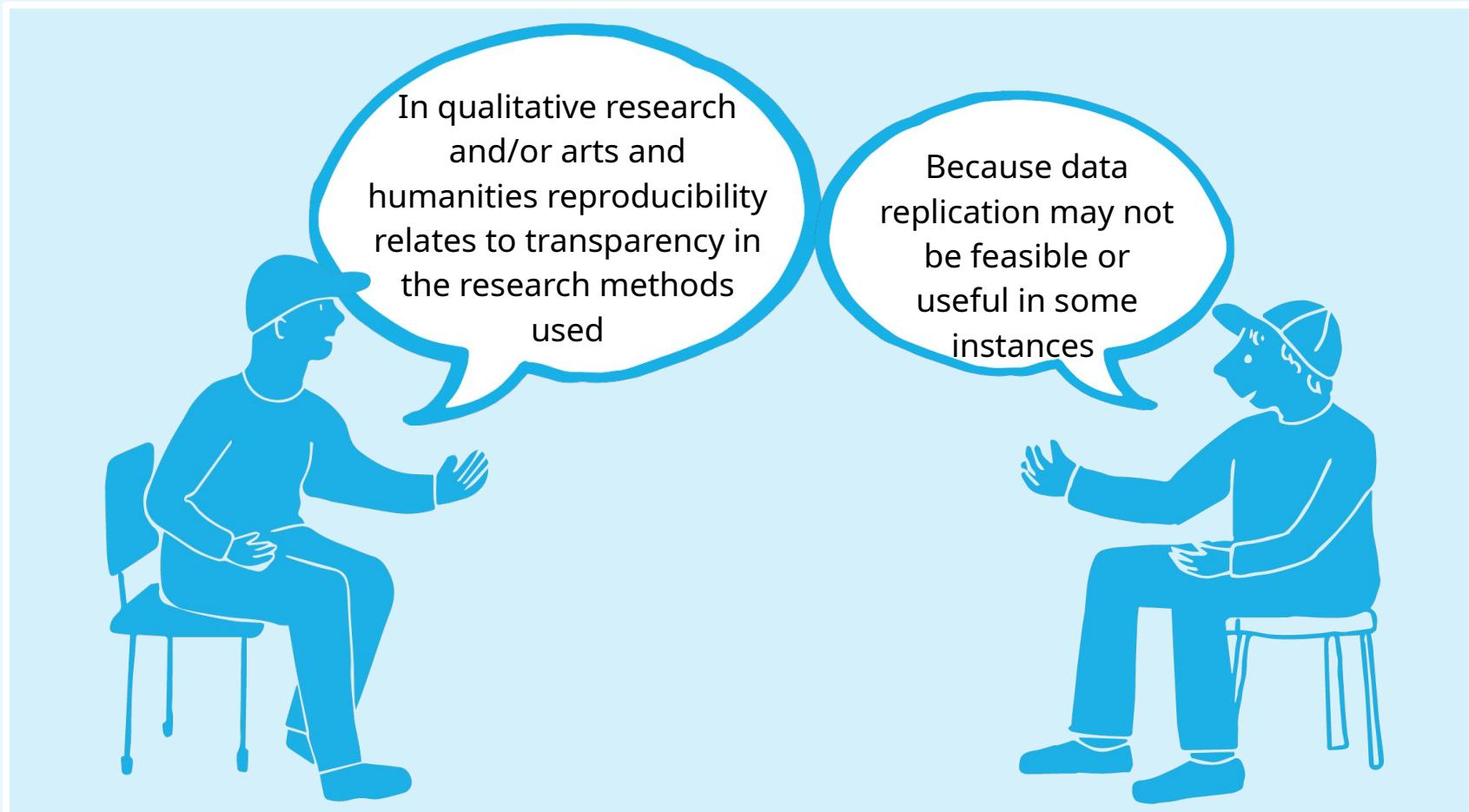


Making these
available for
public/peer
evaluation



Taking steps in the
study design
process to minimise
bias

Reproducible Research Practices



Reproducible Research Practices

Why is
reproducibility
important?

1

It ensures research can be assessed, verified and confirmed by other researchers

2

It helps identify and correct situations where researchers have engaged in questionable research practices

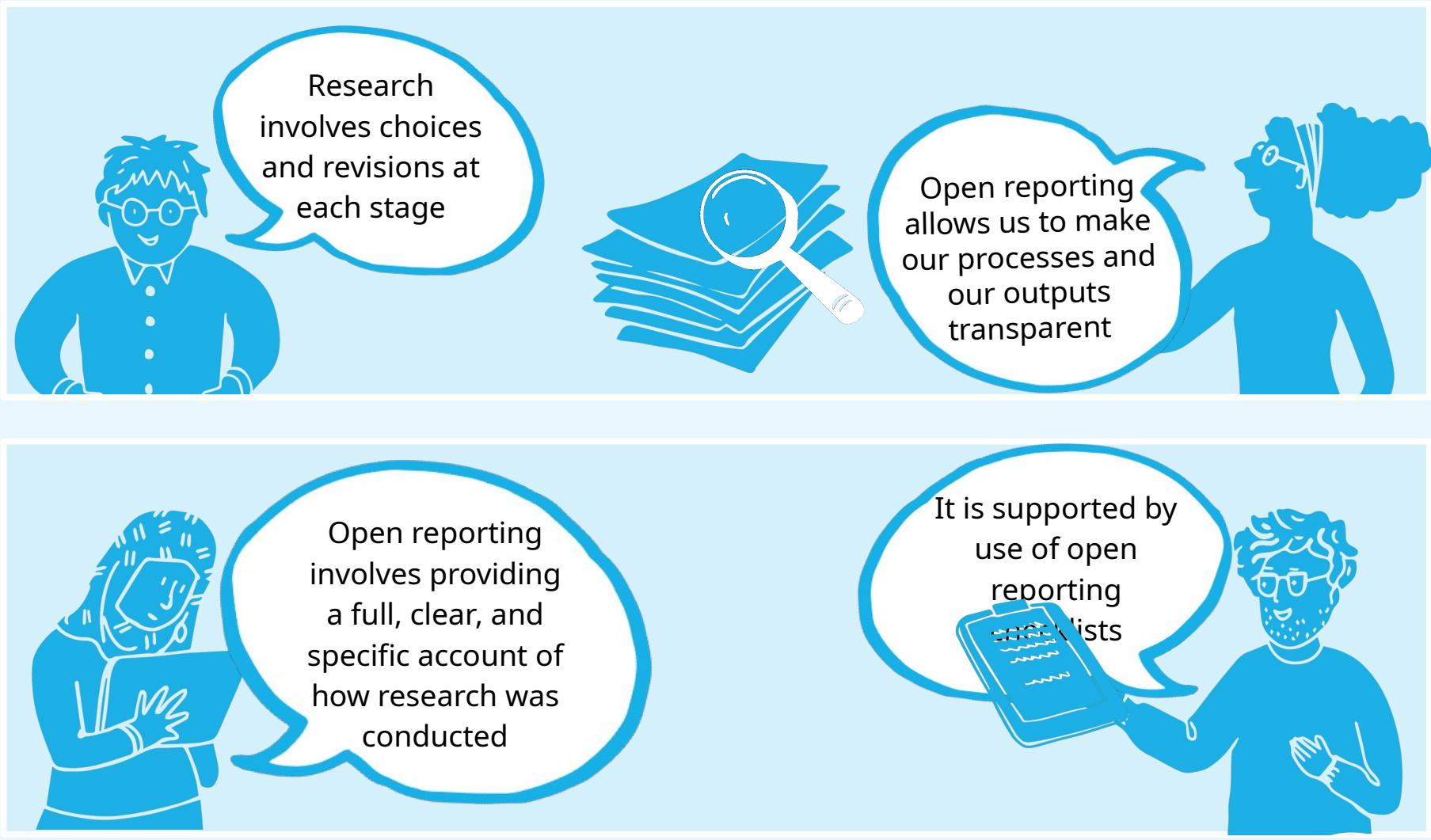
3

Creating a culture of reproducibility can discourage researchers from reporting only those findings that are significant/exciting

Open reporting



Open Reporting



Open Reporting



Why is open reporting important?

1

It allows researchers to detail their processes and decisions at all stages of the research cycle

2

It enhances other researchers' ability to evaluate a study's results

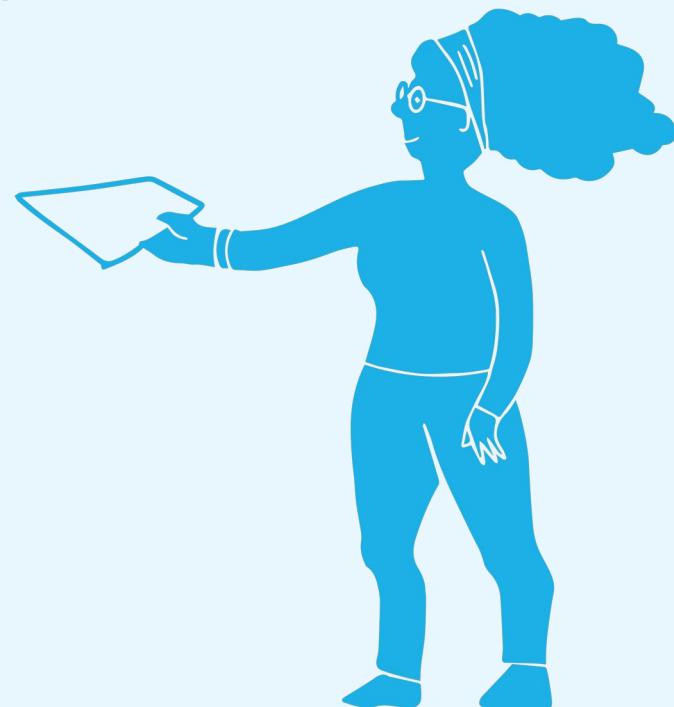
3

It enhances other researchers' abilities to reproduce a study's results

4

It benefits decision-making at individual and societal levels, because decisions can be made on transparent processes and findings

Open knowledge dissemination



Open Knowledge Dissemination

Open knowledge dissemination means communicating knowledge gained from research in open and accessible ways



This expands on the traditional approach to sharing research knowledge, which involves publishing it in an academic journal that often can only be accessed by paying a fee



Open Knowledge Dissemination

Approaches to open knowledge dissemination include:

Open access publishing

Anyone can access the published research, without paying a fee

Pre-prints

Versions of research papers made available online before being peer-reviewed and published

Repositories

Databases people can use to store and access research papers and/or datasets

Science communication

Sharing research in a way that increases appreciation, excitement, understanding and impact of research

Data visualisation

Representing data graphically or visually to increase its accessibility

Open Knowledge Dissemination



Why is open knowledge dissemination important?

1

It increases public access to and interest in research

2

It increases the transparency and openness of research

3

It helps reshape what is considered important in research and academia

Activity

Complete the activity on Canvas to reflect on where in the research cycle different open research practices are relevant



