

# Open Research Online

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## Open Research

### Book

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# OPEN RESEARCH

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# INTRODUCTION



The OER Hub team in Krakow, Poland (l-r: Natalie Eggleston, Rob Farrow, Beck Pitt, Martin Weller & Bea de los Arcos) ([CC BY 4.0 International](#), [OER Hub](#))

Welcome to the open textbook version of *Open Research* based on the two iterations of the award winning open course by the same name which was facilitated by the [Hewlett Foundation](#) funded [Open Education Research \(OER\) Hub](#) during 2014 and 2015. Thank you to everyone who participated in the facilitated versions of the course, and for your contributions and suggestions. We have retained the original feel of the original 4-week course but have revised and updated material for this Pressbook version. In addition, we have included many of the insightful contributions from participants and also suggest group activities so that you can use the textbook to facilitate discussions with students, colleagues or friends.

## **Who is this resource aimed at?**

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[What does it mean to research in the open?](#)

[Why should I make my research open?](#)

[How do I research openly?](#)

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If you have an interest in openness, open education, research skills or want to find out more about the impact of Open Educational Resources (OER), then this resource is for you. You could be:

- Using an OER with students and interested in assessing its impact
- Facilitating sessions on open practice with students or colleagues and looking for inspiration
- Working on a research project and wanting to find out more about incorporating open research techniques into your own practice
- Curious about the benefits and challenges of open research
- Looking to use open tools in your research
- Wanting increased impact for your research
- Interested in open research on OER

This resource will help you explore what open research is, how you can ethically and openly share your findings so others can reuse or develop your work, and the role of reflection and open dissemination. Whilst many challenges and issues apply to all aspects of research (for example choosing an appropriate methodology), open research brings a range of different opportunities and challenges; it's these that we are specifically interested in exploring. What can openness add to the research process?

## Learning Objectives

By the end of this Pressbook, you will be able to:

- Understand what it means to conduct research openly and the benefits of doing so
- Understand the key challenges that can arise when researching in the open and how to address these
- Use open resources that will assist with planning your research project (however large or small!)
- Learn about best practice for sharing your research and how you can contribute to an international understanding of the impact of OER



"Open, Open, Open" (CC-BY 4.0 International, Beck Pitt)

## How to use this Pressbook

This Pressbook has been designed so that you can work through it as an individual, a group and if you're a facilitator or educator, to use the content and activities to aid discussion. Activities have been



structured so that you can use your preferred method of tracking your progress through material. You might want to blog your reflections as you progress through the course. Or perhaps you'd prefer to use an online or hardcopy notebook. If you're working as a group, maybe you'd prefer to brainstorm your ideas collectively and take photos of what you produce as a record. The choice is yours!

Following most of the activities you will find a commentary which includes topics you might want to consider and a selection of example responses mainly drawn from participant contributions. These can be used with their accompanying activity to stimulate individual and group reflection or to structure and facilitate group discussion. We would love to hear how you reuse and develop the course material, and share this with others so the community benefits. If you'd like to participate, [please get in touch](#).

## About the authors

The 2014 and 2015 iterations of *Open Research* and this Pressbook were written by OER Hub team members [Bea de los Arcos](#), [Rob Farrow](#), [Beck Pitt](#) and [Martin Weller](#). The [OER \(Open Education Research\) Hub](#) are leaders in researching the impact of open educational resources (OER) on learning and teaching. We are based in the [Institute of Educational Technology](#) at the Open University (OU) in the United Kingdom. [The Open University](#) has an open admissions policy and is Europe's largest provider of online distance education.

You can find out more about the OER Research Hub team [here](#). If you're interested in finding out more about the kind of open research we do, you can visit our [homepage](#) or follow us on Twitter ([@OER\\_Hub](#)).

## CHAPTER 1.

# OPEN RESEARCH

In this chapter we'll be thinking about what open research is. In what ways does open research differ from traditional research? What kind of benefits could open research bring? What kind of challenges might an open researcher encounter? You'll also have the option to explore open tools you could use to help conduct your research.

### Learning Objectives

By the end of this chapter you will be able to:

1. Understand what it means, and how, you can conduct open research
2. Be able to structure your own open research project
3. Understand some of the challenges and benefits of different aspects of open research

## 1.1 What does openness mean to you?

As we mentioned in the introduction, as researchers we are interested in the impact of open education resources (OERs) that are being used within an educational context. OER are resources which are often available online, can be remixed and repurposed, are available in the

public domain and are usually openly licensed. The Hewlett Foundation describes OER as:

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*OER are teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and repurposing by others. Open Educational Resources include full courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials, or techniques used to support access to knowledge. (Source)*

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### **Activity 1: Openness (10 minutes)**

Openness is not just applicable to research. You can practice openness in lots of different contexts. As you can imagine there are lots of different ways to define openness. Take a moment to think about what you think 'openness' means.

If you are interested in finding out more about debates around the meaning of openness, check out another School of Open course [Why Open?](#)



"Is Licensing really the most important question for OER?" (CC BY-SA 2.0 Generic, [opensource.com](https://opensource.com))

## Commentary

There was a wide range of responses from course participants which reflected a range of interconnected ideas about the meaning of "open." In summary:

- Sharing was highlighted as an important aspect of openness and can be linked to the idea of openness as a practice. Releasing your material into the open, making it available for comment and reuse and letting people know how you would like it to be used and attributed (e.g. through open licensing) were all highlighted as important aspects of this
- Openness was associated with increased visibility and usability through there being "no barriers" to reuse and minimal or no technical barriers
- There was some discussion around whether releasing material in the open entailed loss of ownership of that resource. A distinction between "authorship" and "ownership" was noted to highlight that open licensing requires you to attribute the creator of a resource, for example
- Transparency and honesty. By sharing resources and material in

the open you are enabling others to comment on your material and inviting feedback

- Openness was also highlighted as a potential “social justice enabler” by removing the cost to access resources, for example
- Openness was associated with a loss of control as the impact and reuse of materials cannot be controlled. However this was also viewed as exciting as it could lead to serendipitous outcomes and exchanges
- Other types of open were also highlighted in discussion, e.g. open access or open licensing

Selected participant contributions which explore one or more of these ideas:

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Openness, In the first instance, for me, is about ‘being open’; that is, being open as opposed to simply making open resources ...openness requires the ability to be vulnerable, indeed super-vulnerable; either learning or making, it is after all in the open. Cameron Neylon makes this point that it’s also about humility, in that the author of open resources, despite being supremely knowledgeable about their work or resource, can’t predict the use and application to which your work might be put (for better or worse)”

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For me, openness means an honesty about the messiness of research and transparency in methods and process that helps both the researcher and the audience. It helps the researcher by allowing others to comment and get involved in the research earlier if they spot flaws in the methodology or process, and the audience by showing (especially junior or first-time researchers) that research is rarely a clean progression from simply-defined

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goals to a final research output, and instead involves reworking and change as certain aspects of the originally-scoped research may become untenable or new areas prove to be more interesting or researchable”

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For me openness is a way of thinking and a way of being in one's professional capacity. It has both 'negative' and 'positive' aspects – 'negative' in that it is about removing barriers to knowledge or resources e.g. removing paywalls thus giving access to research, knowledge, data, or ideas, while the 'positive' is that openness is an enabler and actively giving permission to be able to use, revise and repurpose through say CC licences – which is then remixed and reshared thus perpetuating a constant state of openness.”

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## 1.2 What is open research?

### **Activity 2: Thinking about open research (15 minutes)**

Let's focus on the idea of openness in research. How is open research different from other kinds of research? What characteristics does it have? What tools and methods does it adopt? Explore the [School of Open site](#), look at some of the resources below or think about your own experiences. When you are ready, develop a brief definition of open research.

We'll be exploring openness in research in more detail as the course progresses, so don't spend too long creating a definition, the aim is to just to get you considering open research.

**Resources:**

- [Why openness benefits research \(blogpost\)](#)
- ["The Impact of Impact"](#)
- [Right to Research Coalition: Open Research Glossary](#)
- [The Open Science Project](#)
- [Wikipedia Definition of "Open Research"](#)
- [Open Science Framework \(OSF\)](#)
- [Open Research Exchange](#)
- [Open Data for Development](#)

**Additional Questions to Consider**

How do you think openness might change the way in which you research? Think about the kind of research interests you have and the research you conduct. When could open research be important in this context?

## Commentary

Openness in the research process can occur at any point and is often ongoing through the duration. Some thoughts and ideas about open research:

- Open research is the sharing not just of outputs at the end of a project, but also throughout the duration of a piece of research. It can include the sharing of methodologies, data and other tools
- By publishing methods, findings and other aspects of your research as you go along, there is the opportunity for others to comment, advise and engage with your research as you go along, and not just at the point of publication. Open research could therefore be described as enabling collaboration
- There is an ethical obligation to conduct open research, especially in instances where research has been publicly funded

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There's another aspect to Open Research, and that is the sharing of interim outputs in the case of long-term projects. Especially for those that deal with large amounts of statistical data and occur over several years, it's possible to provide greater value to the public by releasing interim stats, figures of findings before the project has come to an end. This of course raises the importance of adequate and understandable metadata so that end-users of the research know exactly what time-periods those statistics refer to"

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## 1.3 What does open research mean to others?

### **Activity 3: What open research means to others (30 minutes)**

Explore the three sets of short video clips below. Write down your thoughts and responses to the following questions:

1. What do you think the key points are?
2. Where do you think openness made a difference to the research process?
3. Which examples (if any) seem most compelling to you? Why?

*You can read more about the contributors and their work by clicking on their name.*

*These videos are subtitled and you can also [download a transcript of all the videos](#) in this section or find the transcriptions in the Appendix.*

**Do you see a difference between open research and traditional research?**

**Chris Pegler**

<https://youtu.be/ljyaKUhrbNE>

**Patrick McAndrew**

<https://www.youtube.com/watch?v=3JFgZqP6rBc>

**Cheryl Hodgkinson-Williams**

<https://www.youtube.com/watch?v=hwoFwLZsXdE>

**Martin Weller**

<https://www.youtube.com/watch?v=oxOM4zJeBQM>

**Where do you think open has made a difference to your own research practice?**

**Patrick McAndrew**

<https://www.youtube.com/watch?v=cFt-uVe14Sw>

**Chris Pegler**

[https://youtu.be/xSucgg\\_xqWA](https://youtu.be/xSucgg_xqWA)

**Martin Weller**

<https://www.youtube.com/watch?v=u7hbH11bYS4>

**In your experience, are there any disadvantages to embracing a more open approach to research?**

**Martin Weller**

[https://www.youtube.com/watch?v=RQIQwVyg\\_MY](https://www.youtube.com/watch?v=RQIQwVyg_MY)

### Commentary

As you've moved through this section of the course, you've probably become aware that increasing transparency, sharing and collaboration (some of the key aspects of open practice) can impact on every stage of the research process. Let's take a look at participant responses to get a flavour of people's thoughts on the academics and researchers interviewed:

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The most compelling examples to me were from Cheryl Hodgkinson-Williams and Martin Weller, about what 'opening up the research process' really means – it means having your proposal, your literature review, your conceptual frameworks and why you chose them, your methodologies, your research instruments and your data all fully (or partially?) available. Is this a bit risky / too time consuming for a newbie researcher or a perfectly achievable PhD goal, with the right planning? These are the thoughts that occupy me at this stage, learning from everyone else :-)"

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... The ability to have feedback early on can really strengthen your research because you get the chance to see whether or not your research stands up to criticism early rather than later. If your statistical analysis methods aren't good, someone may notice and tell you about it before you've sent it for publishing. Each person has biases and blind spots, and the ability to open the research allows others to point those out before you go down the wrong road. An additional point: open research has the ability to greatly transform what would be considered "negative" research: research where you don't get the intended result or you get a bad result (for example, pharmaceutical tests). Without the requirement of publication in a journal, you can access what didn't work."

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The importance of research ethics and the doubts about whether there is a danger of being plagiarised appears to be the main concern. At the same time, there are definite and measurable advantages to researching in the open. Mainly I picked up on three advantages: first the peer review that is ongoing during the research; second the additions to the project from other interested parties, notably the addition of unrecognised benefits to a project ; and finally the time saving ultimately due to the development of much larger networks that is not possible otherwise. It is important to note that open research does not preclude publishing if that is the final objective of the

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research project. The advantages of open research seem to outweigh the disadvantages.”

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...Open research enables small-scale research, often with novice researchers, to happen more easily.” To find out more about Guerrilla Research (Weller, 2013) see: <http://bit.ly/2eeVyck>

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## 1.4 Setting up a Research Project

Now that we’ve talked a bit about what open research means, let’s delve a little deeper and look at the research process itself. Here’s a list (by no means exhaustive!) of different things you need to consider when you’re setting up a research project:

*Planning / Methodologies / Licensing / Ethics / Tools / Data / Evaluation / Dissemination & Communication*

### **Activity 4: Advantages and Challenges of Open Research (20 minutes)**

For each of the different activities/considerations you need to think about when conducting research, in what ways (if any) do you think you can be ‘open’?

For example, what will happen to the data you collect as part of your research? Will you release the data with any research papers

you write? Or will you make the data available once it's been collected and analysed?

Choose two stages in the research process and answer the following questions in relation to your chosen activity/consideration:

- Do you think you can be 'open' at this stage in the research process?
- In what ways do you think you can be 'open'?
- What are the advantages of being 'open' at this stage in the research process?
- What are the challenges of being 'open' at this stage in the research process?
- How could you resolve any challenges?
- Any further thoughts/comments?

You can also review some of the [responses to this activity from previous participants](#).



"Common Good" on Graffiti Wall at OKFest14, Berlin (CC BY 4.0 International, Beck Pitt)

## 1.5 Why conduct research in the open?

Now that we've explored how openness might impact on different research processes and practices, let's explore why you might consider incorporating open practices into your research. For example, if you publically report on the progress of your research and your findings as the work progresses, your research might be exposed to a wider audience than if you waited to publish a final paper after you had finished your research project. Your work could also receive useful feedback and comments from others that help you develop your ideas and research plan.

You might decide that you want to release your findings more formally, e.g. write a journal article. PhD Comics has produced a video (8-9 minutes) called "Open Access Explained!" which gives useful background information and explanation of why open matters even

more than before (Clue: the Internet and the massive increase in the cost of research publications). The video is available [here](#).

As EIFL, who work with librarians in the developing world to promote digital literacy and who have a sub-project that promotes open access, succinctly describes it:

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*For researchers, open access brings increased visibility, usage and impact for their work. A number of studies have now been carried out on the effect of open access on citations to articles, showing the increased citation impact that open access can bring. Open access repositories also provide an excellent means for researchers to boost their online presence and raise their profile. (Source)*

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EIFL have a full list of FAQ relating to open access available [here](#).

Sharing and moving toward a more open model of research potentially has benefits for everyone. Open Economics have produced an article "[The Benefits of Open Data...](#)" which has wonderful examples of the way in which openness helps those in developing countries. In another article, which focuses on research in economics, Guo Xu presents "hard evidence" of the ways in which open research practices have helped those in developing countries, particularly in relation "...to reducing corruption and lowering the cost of information."

## Further Reading

- [Researchers Sharing Data was Supposed to Change Science Forever. Did it?](#)
- [The Battle for Open: How openness won and why it doesn't feel like victory](#)
- [To what are we opening Science? Reform of the publishing system is only a step in a much broader re-evaluation](#)
- [ODDC: Exploring the emerging impacts of open data in developing countries](#)
- [Opening Data in Montevideo: A bottom up experience](#)



## CHAPTER 2.

# ETHICS IN THE OPEN

Are there specific ethical considerations arising from researching ‘in the open’? This part of the book will encourage open researchers to reflect on the wider implications of being open as well as approaches to ethical research.

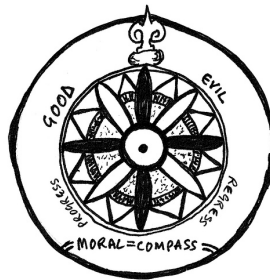
As part of their training, all researchers learn about how to collect, manage, analyse and disseminate data. This section covers the some of things they typically learn about ethics. It is not intended to replace formal training in research ethics although some training modules like these are available openly and will be referred to later. We’ll work through the process in stages.

Our focus here will be on the differences openness can make to these research practices. As we will see, openness can raise problematic cases for traditional approaches to research ethics but also offers novel research possibilities.

### Learning Objectives

- An overview of ethics and its role in research
- Developing a better sense of ethical frameworks and how they are applied

- Applying these frameworks in traditional and open approaches across the life of a research project
- Reflection on the process of institutional approval for research and legal compliance
- Creating tools for evaluating ethical risks in a research project and identifying appropriate action(s)



"Moral Compass Pin" (CC BY 2.0 Generic, Paul Downey)

## 2.1 Why are Research Ethics important?

Most of the interesting questions in life are about people, and as a result a lot of research is done into people: how they behave, what they think, and how they learn and communicate. As a subject for research, human beings are of course quite different to a chemical in a test tube or a rock sample. The moral value of human life requires us to treat others with respect for their wellbeing.

Watch the following short video: [Robert Levine \(Yale School of Medicine\) on the importance of ethics for research involving human subjects.](#)

### **Activity 5: Thinking about research ethics (20 minutes)**

What kind of research do you want to do? What might the impact on human subjects be? Think of three ethical issues that might be raised by the research you want to carry out.

#### **Commentary**

There are lots of different potential reasons that research ethics are important. Some of the reasons people gave when we ran the moderated version of the course included:

- Understanding the ultimate impact of our work on humans, and especially the capacity to cause physical or psychological harm through experiment
- Ethical use of time, especially if working with others
- Trying to get the best “impact” from research activity
- Aspiring to professionalism in research practice: protecting participants; improving skills; promoting reliability and validity
- Understanding what kinds of open and public data can be used ethically in research
- Responding to the evolving ethical and practical challenges

presented by new technologies: open data; social networking; privacy; anonymity; etc.

These are all good answers, some more pragmatic in focus than others. At the practical end of the spectrum we'll be looking at specific guidance shortly. But for now it might be good to reflect on the idea that research ethics is a very recent field – and one that was founded in recognition of the profound importance of the way that human beings treat one another. Most of the time educational research involves people as sources of data. Whenever people are involved we need to take care to ensure that they do not undergo any significant harm. We can understand research ethics as a set of principles (e.g. “do no harm”) or as a set of specific rules that can guide us in specific situations.

Some people thought that if they weren't doing research that could have an obvious impact on human well-being – such as medical or psychological research – then they were less exposed to ethical risks. There may be some truth in this, but the range of possibilities for harm are typically broader than this. We also have to think about privacy, data security, and the longer term implications of sharing research. This is why institutional ethical codes usually refer to experiments that involve human subjects in any capacity rather than just those taking part specifically in medical or psychological experiments. Even information about a person that might seem trivial or inconsequential can have ethical consequences.



"A Moral Compass" (CC BY-SA 2.0 Generic, John LeMasney)

## 2.2 Institutional Research

Usually ethics is addressed in institutional research by adhering to the ethical guidelines set out by one of the advisory bodies that exists for almost every public entity that might be conducting research at some point (e.g. the guidance published by [BERA](#) or [NIH](#)). These bodies in turn are typically informed by medical ethics as expressed in the [Helsinki Declaration](#) (composed in 1964, partly as a response to the unethical research practices that surfaced in [the aftermath of World War II](#)). Institutional Review Boards – the term used to describe institutional research ethics approval committees in the USA – are a direct descendent of this declaration.

Central to most institutional research ethics are guidelines relating to all stages of the research process and what can and can't be done. There are institutional rules, but there are also various forms of guidance offered by research governance bodies.

The following table (adapted from Farrow, 2016) highlights the principles underlying the guidance offered by three major UK research governance bodies: the Economic and Social Research Council (ESRC); the British Educational Research Association (BERA); and the British Psychological Society. While the wording can vary, most of the advice given is quite consistent. This is because most research ethics guidelines can trace a common origin back to the aftermath of World War II.

Principle	ESRC (2015)	BERA (2011)	BPS (2010)
<i>Respect for participant autonomy</i>	Research participants should take part voluntarily, free from any coercion or undue influence, and their rights, dignity and (when possible) autonomy should be respected and appropriately protected. (ESRC, 2015:4)	Individuals should be treated fairly, sensitively, with dignity, and within an ethic of respect and freedom from prejudice regardless of age, gender, sexuality, race, ethnicity, class, nationality, cultural identity, partnership status, faith, disability, political belief or any other significant difference. (BERA, 2011, §9)	Adherence to the concept of moral rights is an essential component of respect for the dignity of persons. Rights to privacy, self-determination, personal liberty and natural justice are of particular importance to psychologists, and they have a responsibility to protect and promote these rights in their research activities. (BPS, 2010:8)
<i>Avoid harm / minimize risk</i>	Research should be worthwhile and provide value that outweighs any risk or harm. Researchers should aim to maximise the benefit of the research and minimise potential risk of harm to participants and researchers. All potential risk and harm should be mitigated by robust precautions. (ESRC, 2015:4)	<p>Researchers must recognize that participants may experience distress or discomfort</p> <p>in the research process and must take all necessary steps to reduce the sense of intrusion and to put them at their ease. They must desist immediately from any actions, ensuing from the research process, that cause emotional or other harm. (BERA, 2011, §20)</p>	Harm to research participants must be avoided. Where risks arise as an unavoidable and integral element of the research, robust risk assessment and management protocols should be developed and complied with. Normally, the risk of harm must be no greater than that encountered in ordinary life, i.e. participants should not be exposed to risks greater than or additional to those to which they are exposed in their normal lifestyles. (BPS, 2010:11)

<i>Full disclosure</i>	<p>Research staff and participants should be given appropriate information about the purpose, methods and intended uses of the research, what their participation in the research entails and what risks and benefits, if any, are involved. (ESRC, 2015:4)</p>	<p>Researchers who judge that the effect of the agreements they have made with participants, on confidentiality and anonymity, will allow the continuation of illegal behaviour, which has come to light in the course of the research, must carefully consider making disclosure to the appropriate authorities. (BERA, 2011, §29)</p>	<p>This Code expects all psychologists to seek to supply as full information as possible to those taking part in their research, recognising that if providing all of that information at the start of a person's participation may not be possible for methodological reasons [...] If a proposed research study involves deception, it should be designed in such a way that it protects the dignity and autonomy of the participants. (BPS, 2010:24)</p>
<i>Privacy &amp; Data Security</i>	<p>Individual research participant and group preferences regarding anonymity should be respected and participant requirements concerning the confidential nature of information and personal data should be respected. (ESRC, 2015:4)</p>	<p>The confidential and anonymous treatment of participants' data is considered the norm for the conduct of research. [...] Researchers must comply with the legal requirements in relation to the storage and use of personal data as set down by the Data Protection Act (1998) and any subsequent similar acts. (BERA, 2011, §26)</p>	<p>All records of consent, including audio-recordings, should be stored in the same secure conditions as research data, with due regard to the confidentiality and anonymity protocols of the research which will often involve the storage of personal identity data in a location separate from the linked data. (BPS, 2010:20)</p>

<i>Integrity</i>	Research should be designed, reviewed and undertaken to ensure recognised standards of integrity are met, and quality and transparency are assured. (ESRC, 2015:4)	Subject to any limitations imposed by agreements to protect confidentiality and anonymity, researchers must make their data and methods amenable to reasonable external scrutiny. The assessment of the quality of the evidence supporting any inferences is an especially important feature of any research and must be open to scrutiny. (BERA, 2011, §46)	Research should be designed, reviewed and conducted in a way that ensures its quality, integrity and contribution to the development of knowledge and understanding. Research that is judged within a research community to be poorly designed or conducted wastes resources and devalues the contribution of the participants. At worst it can lead to misleading information being promulgated and can have the potential to cause harm. (BPS, 2010:9)
<i>Independence</i>	The independence of research should be clear, and any conflicts of interest or partiality should be explicit. (ESRC, 2015:4)	The right of researchers independently to publish the findings of their research [is] linked to the obligation on researchers to ensure that their findings are placed in the public domain and within reasonable reach of educational practitioners and policy makers, parents, pupils and the wider public. (BERA, 2011, §40)	The ethics review process should be independent of the research itself [...] this principle highlights the need to avoid conflicts of interest between researchers and those reviewing the ethics protocol, and between reviewers and organisational governance structures. (BPS, 2010:27)



<i>Informed Consent</i>	<p>Informed consent entails giving sufficient information about the research and ensuring that there is no explicit or implicit coercion ... so that prospective participants can make an informed and free decision on their possible involvement [...] The consent forms should be signed off by the research participants to indicate consent. (ESRC, 2015:4)</p>	<p>Researchers must take the steps necessary to ensure that all participants in the research understand the process in which they are to be engaged, including why their participation is necessary, how it will be used and how and to whom it will be reported. Social networking and other on-line activities, including their video-based environments, present challenges for consideration of consent issues and the participants must be clearly informed that their participation and interactions are being monitored and analysed for research. (BERA, 2011, §11)</p>	<p>The consent of participants in research, whatever their age or competence, should always be sought, by means appropriate to their age and competence level. For children under 16 years of age and for other persons where capacity to consent may be impaired the additional consent of parents or those with legal responsibility for the individual should normally also be sought. (BPS, 2010:16)</p>
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*Table 1. Comparison of ethical research advice, UK professional bodies (categorized according to underlying principle)*

Download a [PDF](#), [Word](#) or [RTF](#) version of the above table.

### **Activity 6A: Institutional Approval of Research (1 hour)**

Find a copy of your own institutions ethical review procedure (sometimes called 'Institutional Review Board' or 'IRB'). You could then compare this with review procedures at other institutions, or just read it to see what strikes you as noteworthy. Here are some key questions to guide this activity:

- Are procedures more or less the same across institutions?
- What kinds of things seem to be the main concerns?
- How do institutional reviews try to assess the risk of a particular activity?
- What kind of strategies for managing risk are proposed/possible?
- Are there difference across institutions?
- Are there differences across subject areas / disciplines?

If you're not at an institution then you could find one that might apply to you in the future or one from an institution that is near to you.

If you can't find one then you can use the information provided by The Open University: [OU Ethics Principles for Research Involving Human Subjects](#).

## Commentary

It's somewhat rare to find a research institution that does not have a code of institutional ethics (at least in the Global North). But this is not to say that there is much diversity: most institutional research ethics codes are the same everywhere around the world, even where they aren't written down formally. This is partly because there's a shared family tree – all the different institutional codes express very similar principles.

One difference is legal compliance, which obviously varies according to country. Institutional review should ensure that any research carried out is legal, but it should also go beyond this, asking whether the work can be ethically justified. So, what's the difference? Many things are legal but arguably unethical, such as adultery, sharing private correspondence, failing to keep promises, jumping queues, and so on. Institutional review is intended to maintain the highest ethical standards, not just compliance with the law.

What happens when you're not affiliated to an institution that has an ethical review panel? You might be working with open data with no-one to supervise the project in this way. Does this entail that everything you do is ethical as long as it is legal? We'll consider this in more detail in the next section.

### **Activity 6B - Protecting Human Subject Research Participants (Optional, 3 Hours)**

One common expectation made of researchers in the USA is that they will have completed the online training module 'Protecting Human Research Participants' provided by NIH Office of Extramural Research.

The training module is a great overview of research ethics and completion also enables you to produce a certificate of completion which is often needed for institutional ethics review.

You can find the training at <https://phrp.nihtraining.com>. It's free and takes about three hours to complete. Completion of this training module is required by many institutions in order to receive ethical approval to conduct research.

## **2.3 Research in the Institution and Beyond**

As an open researcher you will need to ensure that you have any required institutional permissions in place for the work that you want to carry out. Once these permissions are in place then the rules of the institution should be followed. They will normally define the kinds of behaviours that are acceptable. However, it should not be assumed that any behaviours not specifically mentioned (or forbidden) in institutional guidance are acceptable.

If working outside institutional processes (e.g. using Facebook or other social networks to connect with adult learners) you should take

every precaution to make sure that your research adheres to the principles of ethical research. Generally speaking, it's not enough to simply get institutional ethical approval at the start of a project.

- Institutional approvals typically focus on protection of individuals rather than groups
- Research activities can change significantly over the course of a project
- Open projects can have many variables beyond the control of the researcher

It's important to continue to think about the ethical implications of research as a project evolves. Similarly, if you're doing research with informal learners (e.g. a survey of MOOC users) and no institutional approval is required you should still strive to consistently apply the same basic principles that underlie standard modern research ethics:

- Avoiding harm
- Ensuring that consent is informed
- Respecting privacy and persons

Next we'll think about how we might observe these principles if we are working completely outside of institutions and have no requirement to gain permissions for a research project.

### **Activity 7: Ethical Implications of Openness (1 hour)**

Consider the following text from Wikipedia on the definition of 'open research':

---

Open research is research conducted in the spirit of free and open source software. Much like open source schemes that are built around a source code that is made public, the central theme of open research is to make clear accounts of the methodology freely available via the internet, along with any data or results extracted or derived from them. This permits a massively distributed collaboration, and one in which anyone may participate at any level of the project." (Source)

---

Now consider the suggestions for an open research process available [here](#).

Do you think that there are potential ethical issues raised by the suggestions made for 'open research'? Would they be covered by the principles outlined in the previous activity? If not, are there new principles that we need to use when working 'in the open' (without institutional rules)? What might they be?

## Commentary

Networked, digital and open technologies present us with new possibilities for thought and action. It's become much easier to do make decisions that can affect a lot of people, as we saw in the Facebook example.

It is essential that the open researcher understands how to evaluate the ethical significance of their work. The simplest way to do this is to understand the principles of research ethics. A simple list of these principles is provided in Farrow (2016)[1] as:

- Respect for participant autonomy
- Avoid harm / minimize risk
- Full disclosure
- Privacy & data security
- Integrity
- Independence
- Informed consent

How ethical principles are applied is context sensitive, so it's important to keep reflecting on how these inform your work. An important element of ethical judgment is familiarity with ethical issues and how they are usually dealt with. Sharing your experiences with other researchers can be helpful. If you're working without formal support you will need to strike a balance between the exciting

possibilities of 'guerilla research' and the need to exercise good ethical judgement throughout the research process.

Sometimes the impulse to be open can be in tension with our ethical expectations. One course participant raised the example of making research data available openly while protecting the right to privacy of participants. The more raw data is released, the greater the risk to privacy. But as more data is redacted the reuse value is reduced. Because the full implications of being open are often not known until the future, it's necessary to keep reflecting throughout the research process and into dissemination.

In essence, working outside institutions means that researchers must effectively function as their own review panel. It becomes even more important to engage in ethical reflection and develop a working knowledge of ethical risk management and strategies for amelioration.

Most of the rules concerning how research is conducted in institutions are based on several key assumptions. These include:

- The researcher has some degree of control over the research process, and thus has a responsibility for what happens – but can't necessarily anticipate every possible outcome
- There is an expectation that all reasonable efforts will be taken to minimise potential harm to participants
- The responsibilities of the researcher don't end with the study since there is an ongoing requirement to manage collected data at most institutions (typically a matter of legal compliance)
- There may also be rules regarding how the research is disseminated, who it can be shared with, and so on



Openness can make a difference across the entire research cycle:

- Building a research community through blogging and social media to generate and share ideas for research activities
- Using openly published papers to perform a literature review and context for a study
- Sharing proposed methodologies for peer comment (e.g. on a blog)
- Collaborating with other researchers to collect data
- Dissemination through open access publication; sharing data sets; publication under a Creative Commons licence
- Improving the visibility of work through repositories, search engine optimisation and sharing on social media
- Inviting quick and responsive feedback
- Using metrics to establish the impact of a piece of research

When it comes to releasing research data openly it's important to reflect carefully. Both qualitative data (interviews, observations, etc.) and quantitative data (survey results, statistics, etc.) can be released in this way but arguably qualitative data might be less meaningful when considered outside of its original context. There's no way to anticipate



"Citation Needed" (CC BY 2.0 Generic, by Dan4th Nicholas)

what might happen to data that is released openly because it can be used by anyone for whatever reason they see fit.

If you're planning on releasing data openly that should be made very clear in your consent forms so that people can know what they are agreeing to.

### *References*

[1] Farrow, R. (2016). A Framework for the Ethics of Open Education. *Open Praxis*, 8(2), 93-109. doi:10.5944/openpraxis.8.2.291

## **2.4 'Good' Open Research**

Given that we can't always fully anticipate the specifics of future situations it's especially important for open researchers to be aware of future possibilities. There is a real need for using one's own judgment and reflecting on the ethical dimensions of research for oneself. When working in the open – potentially beyond institutional reach – an awareness of ethical principles and how they should be applied is essential.

We might say that thinking for oneself about ethics is characteristic of a 'good' open researcher.

### **Activity 8: What qualities does a 'good' open researcher have?**

What other kind of qualities, skills or attributes might a 'good' open researcher have? Are they the same qualities that we would expect of a non-open researcher? What does 'good' open research look like? What might be the benefits? Either think it through yourself, research online, or discuss with friends or colleagues.

#### **Commentary**

This was probably the exercise that learners on the moderated presentation of the course found hardest. It possible to interpret the question of what makes a good open researcher in two different ways. A more abstract approach might involve identifying the characteristics and personal qualities of such people. There are several examples of where researchers have tried to identify these. For instance, Pring (2002)[1] frames the virtues of educational researchers in terms of: positive interdependence; individual accountability; promoting success; trusting relationships. Toledo-Pereyra (2012)[2] suggests the following qualities: interest, motivation, inquisitiveness, commitment, sacrifice, excelling, knowledge, recognition, scholarly approach, and integration.

The report *Responsible Conduct in the Global Research Enterprise* [3] suggests that there are seven overlapping values for researchers:

- Honesty
- Fairness
- Objectivity
- Reliability
- Skepticism
- Accountability
- Openness

It's noteworthy that openness can be seen as a distinct consideration in this way, even if one has no interest in openness as a specific concern. The need to have a certain transparency about the research process and any findings is a long-standing scholarly virtue.

## References

[1] Pring, R. (2002). The virtues and vices of an educational researcher. In M. NcNamee & D. Bridges (Eds.), *The ethics of educational research* (pp. 111-127). Oxford, UK: Blackwell Publishing.

[2] <http://www.ncbi.nlm.nih.gov/pubmed/22853811>

[3] <http://bit.ly/2eA3Uf9>

## 2.5. Open Research Summary

So far we have looked at institutional processes governing research and ways in which the same principles might be applied outside of institutional requirements. We also considered the ethical implications of being open and the kinds of virtues we might expect open researchers to have.

It's not enough to simply know about good research methods: it's also important to practice them consistently.

The real point to take away from this part of the course is that open researchers need to be bound by the same ethical codes as traditional research. There is even a case for saying that open researchers need a stronger ethical code because they don't have the same support as institutional researchers. So it's crucial that as an open researcher you develop your own moral compass.

A tool that might be useful for this is [A Framework for the Ethics of Open Education](#). Both the principles of research ethics mentioned in 2.2 as well as resources from philosophical ethics are combined in a tool designed to help people think more clearly about the ethical significance of their activities. (For the full paper including a discussion of the complexities that openness introduces into research, see [Farrow \(2016\)](#)).

<b>Duties &amp; Responsibilities</b> (deontological)	<b>Outcomes</b> (consequentialist)	<b>Personal Development</b> (virtue)
<i>Respect for participant autonomy</i>		
<i>Avoid harm / minimise risk</i>		

---

*Full disclosure*

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*Privacy & data security*

---

*Integrity*

---

*Independence*

---

*Informed consent*

---

### **Table 2 – (Uncompleted) Framework**

Download a [PDF](#), [Word](#) or [RTF](#) version of the above table.

Another resource that might be useful is the [OER Research Hub Ethics Manual](#), which was written for an open research project team to facilitate reflection on ethical issues.

### **Activity 9: Your values and ethical decision-making**

Use the materials referred to in Section 2 to help you think about your own values and ethical decision-making processes. Do you act from judgement, or emotion? How do you account for the perspectives of others? Are your approaches to ethics consistent? Philosophical ethics can help us to arrive at answers to these questions.

Since every research project is different you may still have questions or things that you are unsure about. Whether you are based in an institution or not, it's important to keep thinking for yourself, making judgments about the ethics of research activity and the impact openness can have on research.

## Further Reading

- [OERRH Ethics Manual](#)
- [Introduction to Research Ethics](#)
- [Frequently asked questions about human research \(The Open University\)](#)
- [BERA Ethical guidelines for educational research](#)
- [Introduction to research ethics \(University of Leicester\)](#)
- [‘Ethics’, Internet Encyclopedia of Philosophy](#)
- [Peter Singer’s MOOC on ‘Practical Ethics’](#)
- [A short introduction to philosophical ethics for research](#)

## CHAPTER 3.

# OPEN DISSEMINATION

Dissemination is a widely used term, and one that you probably have a general interpretation of, but it is useful to consider a formal definition first. The European Union defines dissemination as:

---

the process of making the results and deliverables of a project available to the stakeholders and to a wider audience.” (Source)

---

How can we make dissemination more in the open?

### Learning Objectives

In this chapter you will gain an understanding of:

- how open dissemination differs from traditional dissemination
- the role that technology plays in open dissemination
- some of the benefits and disadvantages of open dissemination
- Creative Commons licenses



### 3.1. Open Access Publishing

One traditional aspect of dissemination that varies with open dissemination is the publication of research articles that may arise from a project. Over the past decade Open Access publishing has increased in uptake, with many research funders now mandating that any articles arising from their funding must be made openly available. Open Access is usually interpreted to mean “free online access to scholarly works”, although the [Budapest Open Access Initiative](#) (2012) gives a more formal definition, which encompasses not only free access in terms of cost, but also freedom from copyright constraints:

---

By ‘open access’ to this literature, we mean its free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. The only constraint on reproduction and distribution, and the only role for copyright in this domain, should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited. (Source)

---

#### Why Open Access?

Think about why we do research. Whether it is for public enrichment, scientific discovery, improving education or a country’s economy, “research can only advance by sharing the results, and the value of an investment in research is only maximized through wide use of its results.” (Source) Unrestricted access and unrestricted reuse of research results, including research data, are thus paramount to the advancement of our lives.

A project may decide from the outset that any publications will be published under an open access agreement, but this in turn may restrict the number of journals that can be considered. '[How Open Is it?](#)', also available in a [number of other languages](#), is a guide to help you determine how open is a journal and make informed decisions on where to publish. If you would rather have someone else do the work for you, then search [The Directory of Open Access Journals](#).

Publishing open access may also have implications for the budget; many publishers charge Article Processing Charges (APC) to offset costs incurred in peer review management, journal production, online hosting and archiving, etc.

### **Activity 10: Advantages and Challenges of Publishing Open Access (20 minutes)**

In your opinion, what are the advantages and disadvantages of publishing research and data openly?

## Commentary

SPARC Europe write about the benefits and challenges of open access, which we reproduce here:

### ***Benefits***

Different stakeholders in the system of scholarly communications can and will benefit from no restricted access to research and data:

- Researchers as authors: immediate visibility for research output and thus increased visibility and usage of their results. Open Access may even lead to an increase of impact
- Researchers looking for information: access to literature everywhere, not only from a campus but also from any site with wifi access
- Funding agencies: increased return on investment (ROI), increased visibility
- Universities & research institutes: greater visibility, clearer management information
- Libraries: increased access for target audience, financially a more attractive model than the current subscription model
- Teachers & students: unrestricted access to material, enriched education, allowing equality of learning in poor as well as in rich nations
- Science: enhanced and accelerated research cycle

- Citizens & society: access to knowledge / access to the results of publicly funded research
- Enterprises: access to critical information
- Publishers: transparent business model, ultimate online article distribution, ultimate visibility for articles

### ***Collective challenges in the system of scholarly communications***

- The need for researchers to maximise the dissemination and impact of their research
- The need for readers to have access to the full corpus of relevant research literature
- The possibility of creating a continuum of integrated scholarly information, from raw data to peer-reviewed publications
- The development of open access models
- The emerging technical standards to facilitate open archiving
- The need for organisational structures to ensure access to digital archives
- The complexities of intellectual property rights and copyright issues
- Restrictive license conditions
- The disproportionate levels of library budgets spent on journal subscriptions, particularly in the science, technical, and medical (STM) areas

- The concentration of a significant part of scholarly output in the hands of a small but highly influential number of commercial publishers
- A widespread reluctance to cancel print until electronic archiving arrangements are secure

### 3.2 Impacts of Open Dissemination

Having looked at open access publishing in particular, we will now consider open dissemination more broadly. In the case of the OER Research Hub, our research has been supported and facilitated by 'open' dissemination. This open dissemination approach was an integral part of the initial project bid and has helped us meet and deliver our project goals.

We have deliberately:

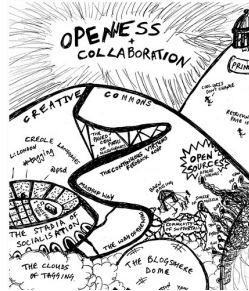
- Created a project identity on various tools including [Twitter](#), [Scoop.It](#), [YouTube](#) and [Slideshare](#)
- Made the project blog the core part of our project identity
- Shared our research progress, outputs and methods on a regular basis, via our website/blogs and other media
- Created and used our [OER Impact Map](#) to encourage contribution and feedback from the rest of the OER community
- Shared our data openly, including survey results
- Shared our methodology and research instruments under a CC-BY license

But it is not always about choice. As we mentioned earlier, many funders now make it compulsory that research outcomes are openly archived. For example, the Research Data Policy of the Economic and Social Research Council (ESRC) in the UK stipulates that “All data created or repurposed during the lifetime of an ESRC grant must be made available for re-use or archiving within three months of the end of the grant.” ([REF](#)) The US government announced in 2013 that the results of federally funded research should be made freely available to the public generally within one year of publication. ([REF](#))

Can this be detrimental to the impact of your research? An article by Y. Niyazov and colleagues, published in PLOS One in early 2016, argues that publishing open access improves the number of citations. ([Source](#))

### **Activity 11: Can Open Dissemination make a difference? (15 minutes)**

Consider the example of the [OER Hub](#) or any other project that you are familiar with. How do you think disseminating in the open in such a manner may benefit/hinder a research project?



“Openness and Collaboration” (CC BY 2.0 Generic, Paul Downey via Wikimedia Commons)

## Commentary

Here are some of the benefits of open dissemination highlighted by participants in the facilitated version of the course:

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Working in the open potentially ensures more careful outputs”

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... the possibility of building live, collaborative networks even after the initial research has been scoped and planned”

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... the ability to connect with key stakeholders who are likely to be interested and impacted, and who may feel involved and invested to become part of the project”

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Increased public engagement as “research is made relevant and accessible to the public and society”

---

The latter, however, can also be considered a limitation:

---

An open approach to research (...) may invite many distracting requests and

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queries. I've seen this happen in a project where there was so much interest to deal with that the museum had to formalise and somewhat restrict what had been an open door policy to their research project"

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### 3.3. Facilitating Open Dissemination

With the advent of technology and the growing influence of social media communities, we now have a wider interpretation of 'openness'. The concept of sharing outputs is no longer just viewed in a formal sense (e.g. a journal publication), but outputs can include informal ideas, suggestions and presentations.

Here are some examples of how technology has been supporting openness to a wider community:

1. [Stephen Downes](#) curates blogs on a wide range of topics relating to educational technology, and publishes a daily and weekly digest.
2. *[True Stories of Open Sharing](#)* is compiled by Alan Levine and "...shares moving, personal stories that would not have been previously possible, enabled by open licensed materials and personal networks."
3. *[Ten things you need to know about ORCID right now](#)* highlights the importance of having a permanent identifier for researchers.



## Activity 12: Tools that support Open Dissemination (30 minutes)

Think about some technologies that support and facilitate open dissemination (e.g. Facebook, Twitter, blogging platforms, Flickr, SlideShare, Scoop.it, etc.). Select which of these tools you would use to disseminate your research and reflect on why.

In selecting a channel, think about your project's audience and what they could easily gain access to. For example, does your community have ready access to internet? Is your community active on a particular social network? Does your community regularly engage with blogs?

### Commentary

Here are some thoughts and ideas for tools to disseminate research from previous course participants:

---

It depends heavily on what you're doing. From where I'm sitting, Flickr would be entirely inappropriate, mostly because my audience isn't there, but partially because Flickr isn't set up for science. Figshare is pretty awesome, partially because you do get a DOI for your work, which makes it citable,

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and DataDryad is becoming more popular. SlideShare seems to be the location of choice for presentations, though some people host their own. (...) You'd want to make sure your location of choice supports the metadata that your field expects (or would like to see) to ensure your information actually can be viewed, read, and reused."

---

---

My next project could be based on a guerilla research approach, and I would use blogging as the main media/genre (with WordPress as the platform) for dissemination during the research process, as blogging gives the possibility to present coherent thought of some length with the room for commenting and having people follow. At the same time blogging is a way of disseminating that is well accepted in the communities that could be interested in the project and that I could be interested in dialogue with. (...) And then as a media/genre, a blog gives the possibility to embed videos, SlideShares, Tweets and link to other kinds of social media, and thus a blog can be a kind of repository for the different outputs of a project. To spread the news, Twitter is a must. And if it does end up with an article, an open repository would be an option."

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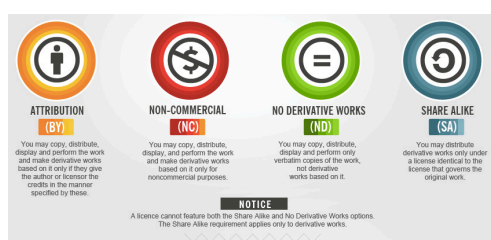
Some of my research project's audience has access to the internet so would follow the blog, look at photos on Flickr and a few may use Twitter. Others use Facebook where the project has a presence, so my online dissemination strategy for research is usually to write a blog post about it explaining the latest activities and findings then tweet the post and share it on Facebook. If there are any related images these are posted within the blog post or on Flickr. Raw data in spreadsheet format will soon be shared online via Google spreadsheet, inviting those who are interested in participating in the research activity to contribute as well."

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### 3.4. Open Licensing

For dissemination to be considered as ‘open’, reuse of a project’s outputs, be it data, presentations, video or articles, would be explicitly encouraged. One way of retaining ownership of the copyright for your content while showing other people that it is “open” and can be reused in specific ways is to openly license them. One popular range of open licenses is provided by [Creative Commons](#) (CC).

The following image explains what each of the licenses allow you to do:



[How to Attribute Creative Commons Photos](#), by FOTER, CC BY-SA 3.0

These licenses can be combined. For example, the image reproduced right above this paragraph has been released under a CC BY-SA license, which means that it can be reused as long as it is attributed and shared under the same terms. The resource creator has not added any restrictions with regard to adapting the resource (note that we have cropped it from [the original](#)) or using it for commercial purposes.

The same applies to research outputs. For example, the survey data that OER Research Hub collected is available on [Figshare](#) under a CC BY license: this means that anyone can access the data file, download it, add more data to it, carry out a different analysis, etc. as long as OER Research Hub are cited as the original provider of the data.

You can also read more about how to license different types of

research outputs (for example data or databases) in the guidelines available via the [Creative Commons wiki](#).

### **Activity 13: Choosing the most appropriate Creative Commons license for your needs (30 minutes)**

Read Claire Redhead's blogpost [Why CC-BY?](#) and reflect on which CC license you would choose to release your research outputs.



Graffiti Wall at OKFest14, Berlin (CC BY 4.0 International, Beck Pitt)

## **Commentary**

As Clare Redhead notes there are a number of arguments for and against using more or less restrictive Creative Commons licenses. Here are some of the reasons previous course participants gave for their use of specific Creative Commons licenses:

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[Context is everything: I work with data and methods and science, and I get paid with grant money. My motivations in publishing openly are to ensure](#)

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other researchers and data enthusiasts can read and use my stuff, so my concerns are very different from, say, an artist's concerns. If someone does something cool with my data and cites me, that's a good thing. If someone takes an artist's awesome image and sells it on journal covers without telling anyone, that's not okay. (...) Because reputation is important in research, my answer is kind of based on the zeitgeist in the field. I'd tend towards the least restrictive license I can get away with given institutional and publication guidelines, and it looks like it's possible in many cases to go straight for CC-BY."

---

---

Well, I'm still researching this and considering options. I've seen a couple of artists who also make moving image who have some clips on their website which are protected and some which are freely available to download and use under a creative commons license. (...) I think that in my own work I am still confused about what might be research which could be openly available to others, and what is my core work and creative capital. There are so many overlapping layers and edges. And since research is not my core activity, but part of my art practice, there are additional formatting and time issues which need to be considered. However, open research is surely about establishing conversations about ideas, and that's a good place to start from."

---

### 3.5 Planning Your Own Research Project

To end this section of the course we would like you to think about your own research interests and plan your own mini-research project. This activity should bring together all of the ideas we have discussed so far.

### **Activity 14: Mini-Research Project (45 minutes)**

Think of all the different things you would need to consider when planning a research project (you can look back at Chapter One if you need a reminder). In what ways could you incorporate open research practices (such as sharing your data or being open about your progress) into your research project?

Download the *Planning your own Research Project* pro forma ([PDF](#), [Word](#), [RTF](#)) and use it to help organise your thoughts. In what ways (if any) could openness make a difference to your research process?

### **Further reading**

- Martin Weller, *The openness-creativity cycle in education: a perspective*
- Martin Weller, *The Virtues of Blogging as Scholarly Activity*
- David Wiley and Cable Green, *Why Openness in Education?*
- The Open University's OpenLearn Course on [Open Education](#)

## CHAPTER 4.

# REFLECTING IN THE OPEN

Working through the sections of this Pressbook, you have had a chance to understand what it means to do open research, what are some of the ethical issues that may arise from doing research in the open, and to discuss the benefits and shortcomings of public dissemination. In this chapter we invite you to reflect on your own experience of being an open researcher.

### Learning Objectives

You will gain an understanding of:

1. Why open researchers reflect in the open
2. When to reflect and who is involved in open reflection
3. Some tools to help open reflection

## 4.1. Researchers Reflect on Reflection

You may not realize it but the act of reflecting is a constant activity, which for the most part remains elusive. We go through our day thinking about what's been happening, how we feel about it, how we

react to events and what are the next steps to take. In research, we tend to record these thoughts as a way of evaluating our progress.

In these three short audio podcasts some researchers talk about their take on reflection in research and how reflection can happen openly.

*You can find transcripts of all the audio in the [Appendix](#).*

**Leigh-Anne Perryman (Academic Staff Tutor and OER Research Hub Open Fellow) on the role of reflection in research.**

[https://openresearch.pressbooks.com/wp-content/uploads/sites/52383/2016/06/leighanne\\_roleofreflectioninresearch.mp3](https://openresearch.pressbooks.com/wp-content/uploads/sites/52383/2016/06/leighanne_roleofreflectioninresearch.mp3)

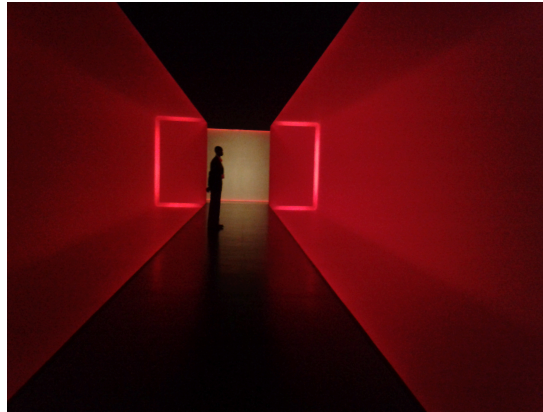
**Tita Beaven (Head of Department and Senior Lecturer, The Open University) on the role of reflection in research.**

[https://openresearch.pressbooks.com/wp-content/uploads/sites/52383/2016/07/titabeaven\\_roleofreflection.mp3](https://openresearch.pressbooks.com/wp-content/uploads/sites/52383/2016/07/titabeaven_roleofreflection.mp3)

**Tita Beaven (Head of Department and Senior Lecturer, The Open University) on conducting research in the open.**

[https://openresearch.pressbooks.com/wp-content/uploads/sites/52383/2016/07/titabeaven\\_doingresearchopenly.mp3](https://openresearch.pressbooks.com/wp-content/uploads/sites/52383/2016/07/titabeaven_doingresearchopenly.mp3)





Turrell's *The Light Inside* at The Museum of Fine Arts, Houston ([CC BY 4.0 International](#), Beck Pitt)

## 4.2. Blogging and Reflection

Reflection in research is closely linked to evaluation: it is about making sense of what we have done, what we are doing and how we are going to evolve. What do we gain or lose when we share this evaluation publicly? Why reflect in the open?

### **Activity 16: Catherine and Megan (45 minutes)**

We invite you to read two blog posts: in [the first one](#), Catherine Cronin, a lecturer in Information Technology at the National University of Ireland, Galway, reflects on her topic of research: digital identity practices in open education. [The second blog post](#) is a reflection by Megan Beckett, Project Manager at Siyavula, on her experiences of sharing.

Read both blog posts and think about the following questions:

- Why do Catherine and Megan blog?
- Do you think they achieve what they set out to do?
- Would you be comfortable sharing as they do? If not, why not?

Here are some other examples of blogs where reflection serves different purposes:

- Gráinne Conole's e4innovation blog (see for instance [Introduction to Designing for learning in an open world book](#)), where she shares some of her book chapters ahead of publication, an 'open approach' to writing a book
- Steve Wheeler's blog, especially his post [Goodbye](#) and the follow up [Seriously...](#) on the rewards and challenges of having your ideas "out there"
- Academic blogging and collaboration make demonstrating pathways to impact an easier matter; [Peter Mathews](#) details the benefits he has achieved by publishing his impact funding statement and inviting feedback from colleagues online



“Blogging 201:PodCamp Pittsburgh 6” (CC BY 2.0 Generic, Jonny Goldstein)

## Commentary

Read below the reflections of two participants in the facilitated runs of the course:

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Community and participation culture are the key words common to the two blogs by Catherine Cronin and Megan Beckett, but the bloggers use their blogs for different purposes:

The one establishes a starting point for her PhD work in the open and invites the community she is a part of via her followers to take part in her thoughts on the project. The focus is on the project and on the impact of the project on the life-work balance. From the number of comments to the blog post, you can tell, that here is already a scholarly community to share and be in dialogue with.

The other is about seeking a platform to share ideas and thoughts from and trying out a voice to go public with in a much more essayistic mode of writing on the process of becoming a scholarly blogger. (And by the way I’m a fan of ‘Brain Pickings’, too.)

The two blogposts are both very good reads with interesting content and lots of links. I have been using both modes of blogging – the content centered and the more essayistic – but I am most comfortable with the first. It has to do with the fact, that online sharing is like broadcasting, and as the internet takes your words anywhere, they might also be misunderstood or misused, so I prefer not to expose my private thoughts too much. They might come

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back to me like a boomerang in a way I wouldn't like. The danger of someone stealing my ideas is less of a concern for me, as the blog is licenced (...) and I think that blogs and ideas are more expected to be attributed in research communities today (- and that being said while I know some might think this is a naive point of view!)."

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Megan's purpose in blogging appears to be to develop her own research skills while also contributing to the development of a shared scientific community that shares openly and through doing so co-develop their skills and research competences. Catherine's way of using her blog seems to be part reflexive-practitioner, part as a means to share her initial thinking about her current research which allows for the possibility of feedback from interested scholars. Both of them are engaging in a form of open research by discussing their roles or methodologies as researchers and inviting commentary and critique.

I'm not sure if I would be that comfortable sharing as they do just yet, as I still feel I need more experience and knowledge as a researcher to build up my own competence. Nevertheless, I applaud the effort!"

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### 4.3 Reflection and Evaluation

Who is involved in reflection in the context of evaluating an open project? Do we have to reflect in isolation? Can reflection also be collaboration? Is the value of reflection only important at the end of a project? How important is it to reflect in a structured manner?

Watch [Leigh-Anne Perryman](#), OER Research Hub fellow and author of the [OER Research Hub project's Evaluation Framework](#) answering these questions. Do you agree with her?

*These videos are subtitled and you can also find transcripts of the audio in the [Appendix](#).*

### **Who should be involved in doing open reflection?**

<https://www.youtube.com/watch?v=gd2kPjpgxOk>

### **When should reflection happen?**

<https://www.youtube.com/watch?v=P-P3gsor-DY>

## **4.4. Tools for Reflection**

Blogging is probably one of the easiest platforms to share your thoughts publicly, but reflecting doesn't necessarily mean having to write a long piece. You can record a video or audio podcast, publish a series of tweets, draw some pictures, keep a photo journal, etc. What follows are examples of open reflection in different formats.

- Chrissi Nerantzi uses a [visual diary](#) to help her rework the Literature Review section of her PhD
- Diana Samson uses Storify to collect tweets in [MOOC MOOC Learning Reflections](#)
- Susan Spellman Cann videos her reflections in [Becoming an open educator](#)
- Wells for Zoë, a small humanitarian organization in Malawi, keep a [Photo journal](#)
- Beck Pitt sketch notes [Catherine Cronin's plenary at OER16](#)
- Matt Might uses pictures to describe what a PhD is in [The Illustrated Guide to a PhD](#)

## 4.5 Reflecting on your own research

In this last section we invite you to reflect about how open you have been when conducting research in the past, how open you are now and how open you can be in the future. If you'd like, be creative about the tool you use and about who you do your reflection with.

Here are some questions to help your reflection:

- How open were you when conducting research before you started working through these materials?
- What parts of your research, if any, did you share openly?
- What do you think works well for you about doing open research?
- What do you think might not work so well for you?
- What are you going to do to be a (more) open researcher in the future?
- How are you going to change your practice?

## CHAPTER 5.

# FINAL THOUGHTS

Thanks for using our *Open Research* open textbook. We'd love for you to connect with us and keep in touch. We'd also love to hear how you utilised the material and your thoughts and ideas for extending and improving it. You can:

- Email us: [oyer-research-hub@open.ac.uk](mailto:oyer-research-hub@open.ac.uk)
- Check out our website: [OER Hub](#)
- Follow [@OER\\_Hub](#) on Twitter and use [#openresearch](#)
- If you are a graduate student with an interest in open education, consider joining the [Global OER Graduate Network](#) (GO-GN)
- Contribute and help build a picture of open education activity around the world. Check out the [OER World Map](#) project

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[I remember that I never wanted people to know exactly what I was doing especially my classmates for fearing that they could copy my work... but coming to think about it... I should have shared my insights".](#)

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# APPENDIX

## *Transcripts for Open Research 1.3: What does open research mean to others?*

### **Chris Pegler on the Difference between Open and Traditional Research**

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Well, for me, when I tend to talk to people about open I use the libre and gratis sort of qualifiers. So in terms of research being open access I think that this is obviously important to researchers and not just to researchers but people... public members who are doing research. It means that they can have access to high quality content. Now if I can take myself as an example, I'm a national teaching fellow, I was recently at a symposium with other national teaching fellows - we're all still active to some extent in education - but if you are not tied to an institution anymore you don't have access to institutional libraries. So you can see that for people like that then access to open access educational resources is important. So that's the sort of libre side of things.

In terms of the gratis, I think this is fairly untested with open research. Whereas we've been sort of getting our hands dirty with open educational resources in terms of being able to remake them and remix them. I'm not convinced I've really seen it. Only in terms of the release of open data have I seen this sort of happen in open research and I think it's important. It has the potential to become very important. But I'm not sure how you resolve this issue about ownership and trust, and if you've carefully worded a research journal article whether you'd be happy with someone taking that and reworking it."

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### **Patrick McAndrew on the Difference between Open and Traditional Research**

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Well I think when you are researching open educational resources there are some additional

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challenges that come about it. I think it's reflected in the fact that over the last 10 years of open educational resources there have been a lot of projects that haven't really recognized the need for research. Which is fine, you want to get on and do things, being open can seem like a no brainer, you just make it open and free so it must help people. But it does mean that we don't necessarily know what's helped us in the past. And I think one of the challenges is a lot of work going on without the space for the research.

Another one is the openness. The openness means that your content can reach out to people but you don't necessarily know who those people are. You don't even know if they're using material directly from your site, or if it's gone and travelled and ended up somewhere else. If you do something in a classroom then least you know where your students are. So when you are in the open you don't necessarily know.

So there's a flipside though, I think, that along with these challenges there's ways to tackle them. And as long as you stick to sound principles in the research – so that's where the connection comes back to other primacies of research, if you treat ethics well but make sure that it gives you the space to get the data you need, if you set out some good research questions – hypotheses – then openness gives you a lot of scope to spot places to get this data. So I think following sound research principles, realizing that perhaps you've got to be quite clever in how you apply them, then I think open research can connect back with other research methods.”

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## **Cheryl Hodgkinson-Williams on the Difference between Open and Traditional Research**

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Yes and in fact we've made a statement and we have a principle that we are wanting to uphold and that is to make our research open. So what we mean by that is that rather than waiting right until the end of a research project, where we have the findings and we publish that in an open access journal, what we are hoping to do is to make each stage of the research cycle open. That doesn't mean to say that we're going to have everything up because clearly research is messy and people don't have time to go through every little bit of messiness, so we will select. But for example the fact that our proposals are available, we're going to make our literature reviews available, our conceptual frameworks – why we chose what we did and alternatives – we'll make that available, our methodologies that we undertook – we've got quite a variety – and then how we went about our instrument development process for surveys, questionnaires, focus groups, document analysis... So not only sharing the final survey instruments, or any of the instruments, but in fact shining a light on some of the underlying assumptions that we've made so there's a much clearer understanding about why those particular questions were chosen. We will then – and this is our biggest challenge – is to actually make our data open. And that I'm less confident about at the moment because we haven't done it yet, but that's our intention. But in terms of our initial dissemination, we have an idea that instead of waiting for the final report that we'll be creating a dynamic research log and building up the research as it goes along, in a way

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which the report structure is layered. So you can get a summary and then you can get a summary of the projects but then if you want to delve deeper you can actually go into the actual questionnaires used in that particular project, the actual data, the list of references, the people who were involved, their contact details.

And this obviously will be dynamic in the sense that people can leave comments and ask questions on the actual document itself. Or for example challenge some of our assumptions. So we're hoping in that way to make it slightly more dynamic and interactive than before. So these I must say – caveat – are intentions. I haven't seen, apart from the OER Hub, which are making quite a lot of the data, the visualisation of the data available – which we are obviously going to connect into as well – I haven't yet seen a research project, certainly not in OER, there might be in other fields, where the entire research process is quite as transparent as this one."

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## **Martin Weller on the Difference between Open and Traditional Research**

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Yeah, I think there is. So open research for me, I think you can see it more or less a list of different things, you needn't necessarily do everything on that list but there are different approaches you might take to open research. So open research would involve possibly using open methodologies, so maybe you're using crowdsourcing. Or it might be looking at the availability of openly available data, doing social media analysis, those kind of things.

It might be a methodological approach to open resource. But more commonly I think it's about opening up the research approach itself, so as you're going along the process you're being much more open about what you're doing. Whereas traditionally, I think, the way we think about research has been much more about you get your research funding, you do a 2 year research project, and then maybe publish an article at the end of it which may be in a proprietary journal. Whereas open research is much more about having all of that process open, all the way along. So maybe even before you've got your research grant you're blogging ideas, you're tweeting ideas, getting input from other people. And as you're going along through your project – assuming it is a project – you are doing things like blogging your results, putting things out there, you're sharing data. So open data is very important ... as long as it's OK to share and can be anonymised and shared openly with other people. And, importantly, you are publishing any findings in open access journals. So there's a kind of a theme, a strand of openness, than can run through research, I think."

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## **Patrick McAndrew on where open has made a difference to his research practice**

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OK. Well, I think in our own research practice, one of the things openness has led us to do is explore benefits that perhaps weren't on our original expectations much more. So

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openness doing resources that leak out and go round the edges, made us spot that there are technology advances that can be sparked by openness, there are certainly new routes in for students and learners that come from having open materials. There are new connections to be made. So it's led to a position where we see open research as a very collaborative process, making new connections with people, being able to apply surveys more broadly perhaps. That's the advantage of the openness coming in, there's are other groups doing interesting things as well. So I think openness has led us to spotting some less obvious results and to working in a very collaborative and open way itself. So open research becomes part of an approach to being a member of the open resource community as well."

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### **Chris Pegler on where open has made a difference to her research practice**

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...One of the things I would say, I'd make a point about, is that I see myself primarily as an educator, rather than as a researcher. So I'm not here talking as a researcher; I'm a researcher as an adjunct to the other things I do. One of the things I would say about openness is that it's much easier to get people to agree to collaborate on projects with you if the outcomes are going to be open. People who are not usually perhaps accessible to you are fascinated by the idea, or interested that if they collaborate with you the outcomes will be widely available and they and other people can draw on them. So I think there's an opportunity there if you are not part of a big research project but you are trying to get some research off the ground, you are more likely to find people to take part.

In terms of publication of research, what I can say is that I've recently been involved in editing a book, which is called *Reusing Open Resources* with Allison Littlejohn. And one of the things that I was firm about was that in order to have claims to be about open research we had to be open ourselves. So we managed to negotiate with Routledge that half the book would be published in an open access journal. I'm also involved in another book on learning design with Sandra Wills and James Dalziel. And that I know is also pursuing the same sort of thing. So I think what I can find in terms of my own practice is that there's an expectation that things should be open, and there's an appeal in things being open. And I do make use of that, in terms of projects that I've been involved in."

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### **Martin Weller on where open has made a difference to his research practice**

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In lots of places really. So I was talking about something called Guerilla Research which is doing small scale research. So I think the idea there is that openness allows you to do different types of research. So it's almost allowing you to rethink what it means to do research. So this idea of Guerilla Research, for want of a better phrase, is to do small stuff

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that you don't need funding for, using open data, open tools, that you then blog about. So all that kind of stuff is suddenly made possible because of openness.

But in terms of what you might call more formal research... I've been a blogger for a long time; blogging is a strong part of my academic identity. That's allowed me to create a global network of peers; which I think previously I would have had to spend all my time going to conferences, and doing keynotes, to keep that network up. And that's led to very tangible results: so I've been invited to go and give keynotes in different places, and that's because of my online identity, which you might regard as open scholarship.

But also it's led to formal research projects, we've got funding for, through a network of people. And also just that I publish my stuff openly so it's always open access. And if I don't publish it in an open access journal, I'll blog it and then tweet the results. So in many ways that kind of dissemination pattern has changed quite drastically, it's not just about the article now it's about the kind of conversation you have about it. And I occasionally write books which are published open access as well. And I've noticed that this kind of open approach all the way along makes a difference. So when I wrote my last book I went back and went through my own blog and found all the relevant stuff that I'd posted about it beforehand; and that not only gave me a starting point for the book – I wasn't starting with a blank slate so it was good – but also I found that loads of people had commented on those posts which I could then follow up with those links, or which maybe got me to rethink what I'd been doing. So writing the book was a much more open process, so openness has really changed the way I work in that sense.”

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## **Martin Weller on the disadvantages of open research**

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Yes, I think so. I think generally you shouldn't see open research, open scholarship, in competition with traditional scholarship, as I think they can be complementary. But I suppose one obvious downside is that I don't publish as much as I used to: traditional publishing. And I if that was really important it might be an issue. I think partly it's because I blog and things; and in some ways that just scratches the creative writing itch, if you like, so I don't need to publish, and sometimes it's just a better way of getting stuff out there. Whereas before I might have written a conference paper, an article paper. But I think it's a more efficient way of doing it but if publications are the one thing that's important then it might impact on that.

I haven't really had much of the issues that some people get ... like getting involved with people trolling you, offensive behaviour. But then I work in educational technology, I know people that work in more controversial subjects, or subjects where there are big strong interest groups, like people who work on climate change for instance. If you put anything out in the open, you have to be prepared to defend it, spend a lot of time engaging with communities or just be prepared to take the flak. So I think it can be difficult. And I think occasionally it can be a bit of a time sink.

But I think in general I've found it... I think there's an investment stage; when I started blogging, when I started using Twitter and stuff. It took time to do it, initial time. But then it

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reaches a payoff point where it actually saves you time. So now if I need to know something – I have a very good network – I just put a call out on Twitter, a lazy webcall, and it will save me time from doing it. And the same when I was writing that book, I think having access to that network saved me time. So I think there is an initial investment phase; but I generally it's been positive for me and there's not been many downsides."

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## **Transcripts for Open Research 4.1: Researchers Reflect on Reflection!**

### **Leigh-Anne Perryman on the role of reflection in research**

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"So I think reflection has got an absolutely vital role in evaluating research projects, and all the contents of a research project, both large-scale projects where multiple researchers are involved and very small-scale projects conducted by a single researcher. In every case, people should be reflecting.

Thinking about what reflection achieves... in a way it allows for consideration of different ways in which the research activities could have been done, different ways in which it could have been planned, and from that it allows for identification of strengths – things that went really well – and perhaps things that didn't go so well. The areas you could improve, in terms of research practices, processes, approaches. And things that could be done different next time, and if there's not a next time for you, let's say you're reflecting on something at the end of your project, if you're sharing that reflection, other people can learn from it. So, it's a learning process, that's absolutely vital. There's not that much point in just reflecting and saying "OK, that's done." You've got to reflect and learn from it.

And ... also in research it helps to identify your own assumptions, the assumptions you bring to the research, and any biases. We all come with baggage as human beings, we're from particular backgrounds, we have particular assumptions and we live in particular mindsets in our perception of our world. And that inevitably will inform the way we conduct our research and the way we draw conclusions. Which is fine! It's fine: if you reflect on it. So if you are very aware of what you bring to the research and how it's affected your findings. And then explicitly share that, again not keeping it to yourself, but share it with other people, say "OK, this research is from a particular perspective, and this is my take on the research" and opening it up to other people then to put their perspective on it.

So I think reflection: vital to research. I cannot imagine any research project being rigorous and achieving valid findings and conclusions without reflection being involved. And so it's the role of the responsible researcher."

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### **Tita Beaven on the role of reflection in research**

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"I think reflection plays a role in all stages of research. So that for instance when I'm setting

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up out on a research project, first of all I reflect on why I'm doing this, what its impact is going to be, whether it's going to make a difference or not? I tend to do a lot of reflection, I suppose, at the design stage. How I'm going to carry out this research project. But I think it's something that happens at all stages really.

So when I'm collecting data, I do a lot of qualitative research, so when I collect data from participants, at that same time I'm reflecting on the research questions, whether these need to be slightly tweaked and so on. And as I say I think it happens also at later stages of the research process so even when you're analyzing the data, when you're writing up, at all those times I think I do a lot of reflecting on what I'm doing and why I'm doing it, and what I want to come out of the research.

And I think it's a process that doesn't really finish when you finish writing up your research, because I think that then you also might present it at a conference, or you might discuss it with colleagues, and you get feedback as well. So I think you're always constantly reflecting on what you are doing, as you do it and even afterwards. And I think that is also becoming more and more important for researchers these days; is to also really reflect on the impact that our research has more broadly."

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## **Tita Beaven on conducting research in the open**

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"Well I think it depends very much on how you work and whether you have colleagues or friends there to listen and act as sounding boards. I mean I'm very lucky that I work with colleagues who research in similar areas to me. So, yes, I think being able to discuss some of your reflections, I suppose, with others is a great opportunity. I don't think everyone has it, and I think that some people are much more private when it comes to their research.

I think the other way in which we can be more open is also in discussing it, for instance, with the participants in our research. And I think this is something that we maybe don't do quite as often as we should, just in terms of getting back to them at the end of the research and telling them what the outcomes of the research have been and getting their feedback on that. So, yes, I think you can be very open. I know that researchers who blog about their work in progress, there are researchers who present their work in progress at work in progress seminars and things like that. I don't do that so much myself but ... I think you can be quite open about it. And I think it's something that should be encouraged actually, rather than seeing research as something that happens secretly and hiddenly and all you see is the end result of it when you see a published article. I think it's actually quite useful to other researchers to see how the whole research process works and how sometimes how very painful it is! Or even things that don't work or don't go as planned. I think it's very important to share not just the success stories but all the stories actually."

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## Transcripts for *Open Research 4.3: Reflection and Evaluation*

### **Leigh-Anne Perryman on who should be involved in doing open reflection**

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“So when you are using reflection in the context of evaluating an open project, I think it’s very important for all stakeholders in that project to be involved in the process, to varying extents and in different ways. The core project team – that would be the researchers, the project manager(s) – they would need to be more intensively reflecting because that will allow for an ongoing process and learning from the results of that reflection. And that then needs to be central to the evaluation process. But other stakeholders, for example, funders, people upon whom the project is intended to have an impact, other collaborators, partners, they should in some way get involved in the reflection process. And that could be via things like feedback surveys, feedback questionnaires, interviews... anything that allows them to reflect, and you to learn from their reflection.

So with all these disparate stakeholders involved in the process of reflection it’s actually pretty important to have some sort of structure guiding that reflection, so providing a framework. So what you might do is look at the outcomes for your evaluation, the things you want to evaluate, the lessons you want to learn along the way. And then set up some sort of framework that prompts people to have a think about those areas, to reflect upon those topics. And then that allows for consistency across all of the stakeholders that are involved in the reflection process. So while it might seem a little odd to say: “Do structured reflection!” it’s just a bit of a prompt, a set of guidelines that makes for a more valuable reflection process.

Another consideration is that while it’s absolutely fine for some reflection to be totally personal and very private to yourself. And in fact when I was working as a Research Associate on OER Research Hub project there were in some times when I certainly wouldn’t be sharing the results of my reflection, let’s say if something went a bit wrong and I think “Right! I’m going to learn from that myself, but perhaps I better keep a bit quiet about it!” But generally it’s best if the results of reflection are shared and it’s a collaborative process, so this in turn will allow for a dialogue around what can be learnt from the reflection. In this instance it can useful then to have a reflection journal, a collaborative document, to which all stakeholders have access, or perhaps a core group of stakeholders have access, to allow all people involved to see each others reflection, have a think about it and then reflect on it.”

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### **Leigh-Anne Perryman on when reflection should happen**

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“It’s tempting to say that you should be reflecting all of the time, especially when you are using reflection for evaluation. In fact we do reflect all of the time, life is a constant and

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ongoing process of reflecting on the actions that we do minute-by-minute, and thinking about whether they worked out and how we can do things differently.

But when we are using reflection as the basis for evaluating a project, as the basis for assessing our research and seeing whether we can make it more rigorous so that we can get more valid conclusions and findings then it can help to have a bit more structure in terms of when we reflect.

So roughly there are two times when one might reflect. There is reflection in action. So that's reflection that happens during an event, during a decision point. And at this stage you may very quickly think "Ohh! This isn't going so well, I'll change and I'll do something different." So that's pretty instant, pretty instantaneous, and in fact you probably wouldn't find yourself recording that reflection at the time, the recording will come later. So that's reflection in action.

The other type of reflection is reflection on action, which will happen after the event, the critical incident, the decision point. It's where you sit down, give yourself some time for the reflection process, have a think about what worked well, what didn't work so well, write it down, think it through and then plan for future action. And indeed planning for future action, reflecting on action, or for action, is another type of reflection. And really if you aren't reflecting for action... no point in reflecting at all! So pretty continual but at key decision points as well.

So if at any point you've had to deliberate over a decision that you've made, have a reflect to think about why you made that decision, and the implications of it and then you can come back later and think about "did it all work well?"

Also this fits in with the need to record reflection. Because it makes sure the reflection gets done, if you've got a structure for recording that reflection. And it also allows other people to engage with the reflection and a constructive dialogue to be built up. Just thinking about some people who propose that reflection should happen right at the end of a project, to learn lessons for the future. In fact, it's arguable that if you're reflecting at the end of a project, it's too late because you can't learn the lessons yourself, the project can't benefit from those lessons. A future project may, but why waste the opportunity not to learn from your own reflection, and let others learn, in the project you're working on, at a particular time."

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