Creative Conversations for Responsible Innovation

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In recent years, in the Public Engagement team at the University of Bristol, we've been involved in several projects relating to responsible research, training researchers on how to be reflexive in their research practice. Most of our work in this area has been conducted in close collaboration with Kilter Theatre, our creative partner. We have explored possible futures, reflected on our views and biases, considered the impacts of research on the environment, and identified missing voices in research. These toolkits are an attempt to bring together our learnings and share them with those interested in exploring reflexivity in research through a range of activities.

The aim of these toolkits is to provide activities for anyone interested in exploring Responsible Innovation/Responsible Research and Innovation (RI/RRI). These toolkits originated from the 'Embedding Responsible Innovation in Researcher Training' project via pilot workshops with a cohort of early career researchers based at the University of Bristol, and were inspired by our work with researchers on the the projects PERFORM, The Legacy Project with Kilter Theatre, and Re-Cognition. In the toolkits, we cover six themes: Your Perspective, Future Thinking, Diversity, the Environment, Wellbeing, and Your Research. These themes are inspired by rather than directed by two frameworks for Responsible Innovation: the European Commission's Horizon 2020 framework for RRI, and the EPSRC's AREA (Anticipate, Reflect, Engage and Act) framework for RI. The toolkits aren't intended to address everything the frameworks cover, and include some themes that don't feature in the frameworks but which, from our experience, we believe merit consideration within RI/RRI conversations.

We hope you find the activities and content of the toolkits useful; that you feel free to modify them and adapt them for your own use; and that you have interesting conversations and experiences by using them. We would love to learn from you as well, so please do get in touch with us (cpe-info@bristol.ac.uk) to tell us how you have been using and adapting them.

What are the Responsible Research and Innovation (RRI) and Responsible Innovation (RI) frameworks?

RRI is a science policy framework and key action of the European Commission's Horizon 2020 funding programme, which frames it as "an approach that anticipates and assesses potential implications and societal expectations with regard to research and innovation, with the aim to foster the design of inclusive and sustainable research and innovation". RRI seeks to align science and technology research and innovation with the needs and values of society. This is mirrored in the UK by RI. EPSRC's AREA framework for RI suggests this approach should include: Anticipation of potential futures; Reflection on motivations and purposes of the research; Engagement with relevant stakeholders; and Action on the outcomes of these processes. As such RI and RRI share common values and purposes with contemporary public engagement.

How can reflecting on different aspects of responsible research and innovation improve your research?

“To me, Responsible Research and Innovation is the foundation of the house researchers collectively build for everyone to live in. If the foundation is no good, there is a risk the house will crumble. Taking the time to consider Responsible Research and Innovation and to re-connect with how and why you are doing your research is akin to house maintenance. To build the house, we bring the knowledge and skills we have gathered throughout our lives. As we build, we shape the future of everyone who will live in it. For many researchers, the aim of research is to benefit society: to learn something for everyone’s benefit; to solve a problem, or to help people in some small way. To ensure that our research serves as intended, we build the house for everyone. We build the house with materials from the land, so that we may live on the land — but we live with it, not just on it. The researchers we build the house with are building the house for other researchers, too. Occasionally they rest, because they have to. Building a house takes time, but the house we are building never seems to be finished. It changes over time, and when we are done with our small part, we hand our tools to other researchers who also want to build.

As researchers, we leavea legacy behind us; our descendants inherit the house.”

Debbie Nicol, Principal Investigator of ‘Embedding Responsible Innovation in Researcher Training’ and PhD Student, School of Chemistry, University of Bristol

> Research can be thought of as controversial and there are people that do not trust researchers. Yet many researchers intend for their work to be for society in some way, shape or form. I have a feeling there is a disconnect when it comes to co-creation of research and knowledge sharing. If the research you are doing is for something or someone then why not have different inputs? Responsible Research and Innovation helps you think about things in a different way and can help you articulate the purpose and impact of your work as well as incorporate various viewpoints. Sharing knowledge helps us connect, perform better, and become stronger professionally. We can collaborate and build collective knowledge to achieve success. I think it was Socrates who stated, 'The only true wisdom is in knowing you know nothing.'"
>
> **Matimba Swana, PhD Student, Department of Engineering Mathematics, University of Bristol**

> Reflecting upon different aspects of Responsible Innovation is invaluable for all types of research because it facilitates a holistic view of the work that you do by challenging you to step outside of familiar ways of thinking and look at a bigger picture from different perspectives. Exploring Responsible Innovation can sometimes be tricky: it may not always be immediately obvious how your individual research relates to the different dimensions of Responsible Innovation; some of the conclusions may be uncomfortable, and the open and anticipatory approach to thinking about your research can be daunting in its complexity and magnitude! However, these challenges are precisely what helps to improve your research; it initiates an on-going process of reflection that helps you to do work that is more ethical, meaningful and relevant to the 'real world'. Importantly, going through this creative process is enjoyable as well as enlightening."
>
> **Mari-Rose Kennedy, Research Associate, Centre for Ethics in Medicine, Bristol Medical School, University of Bristol**

This section is focused on the planning and facilitation of training sessions on RI/RRI. However, many of these activities don't require facilitation, and can be used by individuals who wish to explore these themes as they relate to RI/RRI.

Each toolkit in this collection is prefaced by some introductory text. These introductions, and the quotes included within them, aim to provide context about why it's important to consider the theme of each toolkit in relation to research and why it is relevant to RI/RRI. You could share relevant quotes with the participants prior to or at the beginning of the session by way of an introduction to the theme.

To help you select activities compatible with the time available, size of the group, and mode of delivery, we have categorised the activities in the toolkits according to the following criteria:

- **Length of time to complete:** 10 mins or less / 10-30 mins / 30 mins or more
- **Number of participants required:** individual / 1+ / pairs / 2+ / 3+
- **Works best:** facilitated / non-facilitated
- **Format:** online / in the room

To help you decide when and how to best use each activity, we've also assigned each activity an activity type:

- **Check:** activities that will help self-assess their opinions or beliefs.
- **Disrupt:** activities that will challenge their opinions.
- **Change:** activities that will help implement small changes.

The purpose of the activity and material requirements are also stated, and tips for activity delivery and additional resources are provided where relevant.

DESIGNING TRAINING SESSIONS

Ideally, the contents of these toolkits would be used to create multiple training sessions covering various RI/RRI themes, with time between sessions to allow researchers opportunity to apply these reflections to their own research. It isn't necessary, however, to include all the themes covered here in the training sessions you are planning.

Whilst all the themes touched upon in the toolkits are relevant to RI/RRI, there are two themes in particular that we strongly recommend facilitators explore: Your Perspective is foundational when considering RI/RRI; Your Research is the most obviously relevant to researchers (Future Thinking explores similar ideas but acts as more of an introduction to this theme).

Selecting activities

We recommend that you include one Check, one Disrupt and one Change activity per session (when appropriate).

Activities can be adapted if they do not work as they are for the session you are planning. Some activities can work well in other contexts, too — they are by no means limited to RI/RRI training.

Tailoring sessions to your group

When planning a session for a large number of participants, keep a close eye on timings and allow more time for feedback in the session than you'd expect. Additionally, you can invite participants to feedback at a later time e.g., at the beginning of the next session or at the end of all training sessions.

Keep in mind the size of the group you will be delivering the training to and the space you have for the session (whether in person or online) when deciding what activities to choose. You may wish to adjust session plans when delivering to a different audience.

The group dynamic will be affected by whether or not the participants already know each other. If the participants are meeting for the first time, consider using a shorter activity done in pairs or in small groups as a warm-up activity. Additionally, participants may not have a similar disciplinary background or be at the same career stage. It may be helpful to allow time for the participants to introduce themselves and their research interests prior to beginning the first session. Exploring how discipline and career stage affect researchers' relationship to RI/RRI can also lead to interesting discussion and reflection.

Timing

The time you have available to deliver the training is the most limiting factor in the design of the training sessions. Ensure you select activities that can be done within the desired time frame. Many of the activities in this toolkit can be extended, and tips are given on how to do so when applicable. If you aren't able to block out lots of time for training, training sessions can be delivered in short segments over the academic year. If you do choose to create a series of training sessions, make sure to leave enough time between them to allow participants to reflect on each theme. You could consider providing space in sessions, or using online discussion boards or whiteboards etc, to allow a cohort of researchers to share their reflections.

ALTERNATIVE WAYS TO USE THESE ACTIVITIES

There is no need to plan a full session or training to use the activities. Particularly if it is difficult to dedicate larger blocks of time to RI/RRI, it can be beneficial to use these activities individually. They can also be used just to get participants to reflect on a theme without presenting it under the theme of RI/RRI. It's also possible to adapt the activities for different themes or purposes.

Some examples of opportunities to integrate an activity into typical working patterns include: at the beginning of a meeting; at a break during a meeting, thesis bootcamp, writing retreat etc.; within other training that you are already delivering; at the start of a new project to explore people's perspectives; as the focus for a team meeting; at a social with an ethical theme; as an interactive session during a conference or an away day; or as an ongoing (and potentially evolving) activity in a communal space in the workplace, with instructions on how to contribute.

Facilitation tips

Many of the activities in these toolkits are most successful when actively facilitated. Below we offer some guidance for new facilitators — some of these tips may be familiar to experienced facilitators. You can of course bring your own experience to how these activities are delivered.

- At the beginning of the session, provide an overview for the participants and let them know whether there will be a break. Let them know that nobody is going to be put on the spot.
- Highlight that you are a facilitator, not a subject-specific expert, and this is a shared experience from which you also hope to learn.
- Give a personal story of your current engagement with the subject to demonstrate the above.
- We recommend facilitators institute a co-designed Learner's Contract or Code of Conduct with the group. This should include an agreement that participants will respect the confidentiality of the group; can opt out at any point; and shouldn't share anything they aren't comfortable with. Participants should also recognise that the issues covered in this toolkit are the focus of a rapidly evolving international conversation, the most socially acceptable terminology and ideas are changing and are not universal to all places and cultures, and the group may contain people who are not speaking in their first language. They should assume everyone is acting in good faith and attempting to communicate their thoughts as best they can; and use differences in understanding as points for discussion rather than a cause of offense or conflict.
- Emphasise that the exercises can be used as a way into a conversation and that they can be adapted or left behind to fit the needs and interests of the group. They are a useful framework but shouldn't stop people from exploring what is most important and relevant to them.
- Equally, if the conversation moves too far away from the intended purpose, the 'rules' of the activities are a useful way to bring people back on point. Participants can always be invited to continue off-topic conversation later.
- Whilst facilitating discussions, you can employ the traffic light system: green is when participants are comfortable; amber is when they are exploring outside their comfort zone, and red is when participants become too uncomfortable. You should encourage participants to move between green and amber zones during discussions. If the participants feel that a conversation has entered the red zone, allow them to stop the conversation or take a break.
- Above all, remember that everyone is different, and we all have unconscious biases.

TIPS FOR FACILITATING DIFFICULT CONVERSATIONS

Engaging with RI/RRI can involve difficult thoughts and conversations. It poses questions about the purposes, risks, and ethics of what researchers do and, potentially, threatens a strongly held professional identity. It also includes sharing personal experiences and views, observing how the world is and considering how we would like it to be. This can highlight potentially profound differences of opinion which can be difficult for a group to navigate. These tips can help you to facilitate productive and sensitive interactions.

- Facilitate turn-taking — let everyone know they will get a chance to speak.
- Phrases like 'this is good' and 'we're all learning' can be used to emphasise that discussing differences of opinion respectfully can be productive, and that participants wouldn't be in the session if everyone knew all the answers (if there even are answers) or if

everyone thought the same way.

- If necessary, take a break to avoid or disrupt tense conversations. You can emphasise that the conversation can be returned to at a later point. If possible, encourage people to go outside briefly, or even take the next exercise outside if space and format allow.
- If there are strong differences of opinion, ask participants to put their opinions into the mouth of ‘a friend’. This can de-couple the opinions from individuals and doing this can be more difficult and generate humour.
- Alternatively, ask participants to argue the reverse of their view, so that they must imagine the thoughts and feelings of someone with another perspective. Importantly, participants must avoid saying things like, ‘Well, you obviously think…’ — personal accusations can escalate tension.
- Ask participants to articulate only their own feelings and experience — it’s much easier for someone to step down if they hear ‘I am feeling a bit got at’ rather than ‘you’re getting at me’.

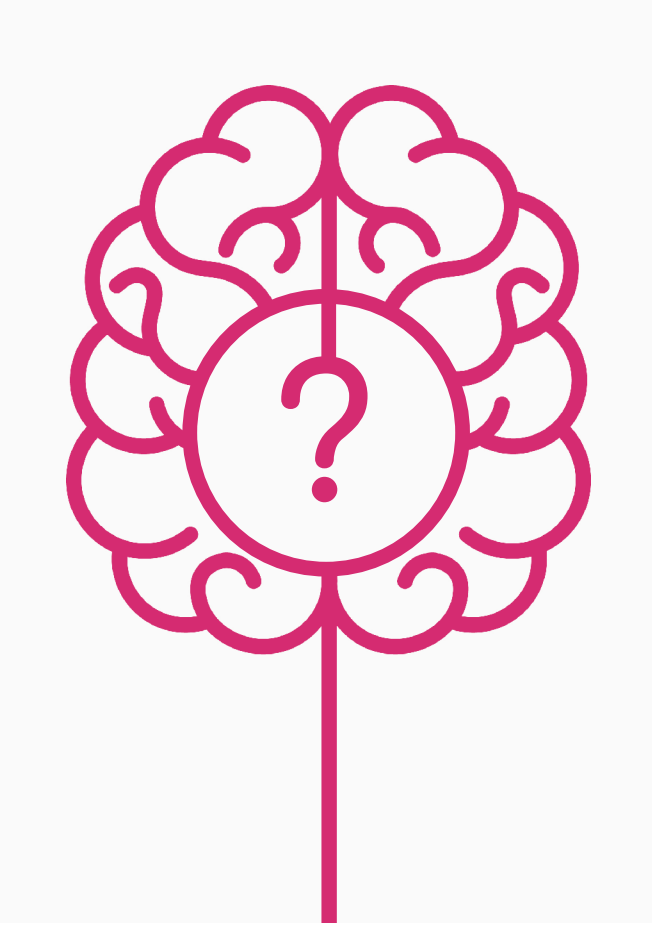
Whilst the conversations can touch upon difficult subjects, when testing the activities presented in these toolkits, we found that so long as they take place within an open and respectful environment, the conversations are stimulating, enjoyable, and valuable to participants and facilitators alike.

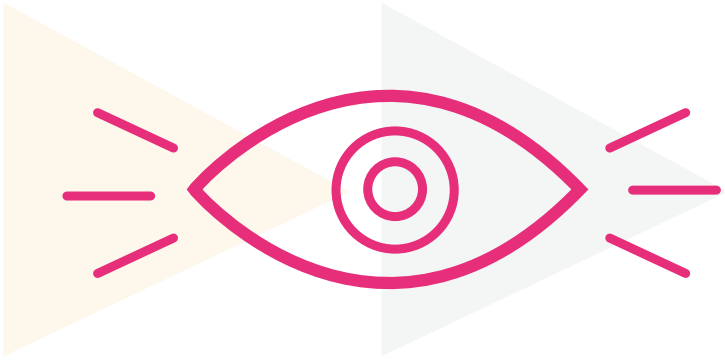
Creative Conversations for Responsible Innovation:
On Your Perspective

Who we are affects what questions we ask, what we perceive as problems and solutions, how interested we are in tackling them, and the approaches we take to doing so.

No matter how good we are at generating questions and solutions, or how empathetic we try to be, how we tend to see and imagine the world is shaped by our current position in it and by our background and past experiences.

Researchers' individual perspectives are useful but by becoming conscious of what their own perspective is they can better understand which perspectives they need to hear to produce research that has more positive outcomes and greater impact. Recognising that their own perspectives are not the only, or necessarily the most significant, ones is at the heart of Responsible Research and Innovation. This toolkit provides a selection of activities that enable people to reflect on how their perspective could determine the nature and outcomes of their research, and to prompt consideration of other relevant perspectives that could enrich their research. Using some of these activities is recommended as a basis for undertaking activities from the sessions on climate change, diversity, wellbeing and future thinking.





Why do you think reflecting on our own perspective of the world is important for good research practice?

“Researchers should always be mindful that their perspective is only one of many ways to view an issue, a question, or a problem. There are many ways to think about each research question and issue, and often good solutions come from a sense of uncertainty, rather than from confidence. As researchers, we should be open to doubt, and to ‘being with’ the doubt and staying with it, even for a long time. Good ideas can take a long time to mature and having this patience is key. This patience is related to what philosophers call epistemic humility. This is an attitude that recognises that our own knowledge is limited, that we learn from others, and that humility about our knowledge is key to good research. Learning from others comes from seeking and listening to other perspectives, removing dogmatic faith in the rightness of our own way of thinking, and an openness to other views.”

Professor Havi Carel,
Professor of Philosophy,
University of Bristol

Research metaphors

10-30 Mins	Participants: 1+	Facilitated or Non-facilitated	Online: Yes	In the Room: Yes

- **Activity type:** Check – activities that will help self-assess their opinions or beliefs
- **Purpose:** To expose implicit, often unacknowledged, assumptions within disciplines and/or research cultures embedded within the language used to describe research outputs.
- **Materials:** Video Reflexivity in Research – Livio Riboli-Sasco (Perform Research, 2018); research papers; pens/highlighters

Instructions

This activity is based on an activity developed by Atelier des Jours à Venir for a reflexivity toolkit as part of the PERFORM EC project. Prior to running this activity, ask participants to watch the Reflexivity in Research video, and to select some key research papers from their field to review on the day. Ask researchers to go through the abstract, line by line, and underline or highlight any phrases of interest, including metaphors, similes, and ambiguous phrasing – language that could have different meanings in different disciplines. After participants have looked through a few abstracts, arrange them into pairs or groups to discuss what they have found. The following questions may be useful for facilitating the discussion:

- Has it been easy or difficult to spot metaphors? Is this because they are so ingrained in the disciplinary language?
- Do the metaphors used in your field induce stereotypical thinking? (e.g. in the reproductive process, framing fertilisation as sperm 'competing' for the egg, or using military language such as "fighting" or "targeting" when talking about health research)
- Are there any alternative interpretations of the language used, other than that intended? (See PERFORM's 'Reflexivity in Research' toolkit for examples, link in Additional Resources)
- Does the language of your field shape your perspective/approach?
- How does your perspective shape the language you use to communicate?

Tips

Depending on the discipline, it may not be possible to find examples of such metaphors in the abstracts. In these cases, it may be worth asking participants to review magazine articles or other forms of communication (e.g., YouTube videos) that introduce the field to a lay audience and probe the language used within.

Encourage non-native speakers to examine research papers in their own language if that would make this activity easier for them.

Additional resources

Martin, E. (1991) 'The Egg and the Sperm: How Science Has Constructed a Romance Based on Stereotypical Male-Female Roles', *Signs*, 16(3), pp. 485-501

PERFORM (2018) Reflexivity in Research: situating knowledge productions, building stronger objectivity. Available at: http://www.perform-research.eu/wp-content/uploads/2018/09/19005_PERFORM_A4-document_05.9_Reflexivitiy-in-Research.pdf (Accessed: 19 May 2022).

Persuasion

10-30 Mins	Participants: 1+	Facilitated or Non-facilitated	Online: Yes	In the Room: Yes

- **Activity type:** Check – activities that will help self-assess their opinions or beliefs
- **Purpose:** To encourage researchers to think about and articulate their own perspective, and to imagine how others might perceive it.
- **Materials:** Pen and paper

Instructions

Think of, or imagine, a relative or friend who doesn't understand why you want to do your research and thinks you are wasting your time. Write them a letter to explain your point of view and persuade them of the benefits of your research.

- How do you explain and justify your research?
- Why is it important that you carry on?
- What are you hoping to achieve?
- Who is it for?

Tips

It helps to think of real people and their real objections or the disconnects between their thinking and your own.

Try to understand/imagine why they have their opinion. What informs their perspective and what understandings are you trying to dispel/change?

If you want to make this activity more creative or exploratory you could offer other letter recipients. For example, a seventeenth-century ancestor; an unborn descendant who will be alive in 2100; an alien just arrived from another planet; a migratory bird; a message to put in a bottle and cast into the ocean.

Where I'm from

30 Mins or More	Participants: 2+	Facilitated: Yes	Online: Yes	In the Room: Yes

- **Activity type:** Check – activities that will help self-assess their opinions or beliefs
- **Purpose:** Reflect on who you are and your standpoint because of/in spite of your background and origins; to challenge your preconceptions of others/yourself; sharing helps build rapport with others.
- **Materials:** Template print-outs if in the room; pen and paper

The *Where I'm From* poem and project was created by writer George Ella Lyon as a way to find people's own voices in response to a perceived rise in xenophobic and isolationist rhetoric in the USA. Here we suggest using the template as a way to reflect on ourselves.

Instructions

Reiterate that we all have different backgrounds, and that who we are shapes the views that we hold and the biases that we have. Explain that the *Where I'm From* poem will illustrate this as everyone's completed poems will be different, and writing your own poem is an opportunity to reflect on your own background and standpoint.

First, share George Ella Lyon's example poem with the participants as inspiration. You could also share your own poem or other examples found on the project website, so that they can see different approaches.

Second, ask participants to fill in the blanks in their poem template. Allow at least 20 minutes.

Third, put the participants in pairs to share their poems and then transform them into a new creation. This could be merging the two poems together; turning them into a conversation or a story or an image; or simply reading each other's poems to the group.

Fourth, ask the group to share their creations and reflect on the activity.

Tips

There are a variety of *Where I'm from* templates available online. Find the one that works best for your group.

This activity can potentially touch participants in an emotional way, but the template provides scope for creative interpretation which allows participants to manoeuvre around things they don't wish to share. When working in pairs, people should not push each other to disclose beyond what they are comfortable with.

This activity is best when given ample time. One option is to ask participants to prepare their individual poems in advance.

Try the activity of writing the poem yourself before facilitating the activity with others. The project's website provides some extra tips and resources on how to run the activity.

Different perspectives on me

10-30 Mins	Participants: individual	Facilitated or Non-Facilitated	Online: Yes	In the Room: Yes

- **Activity type:** Check – activities that will help self-assess their opinions or beliefs
- **Activity type:** Disrupt - activities that will challenge their opinions
- **Purpose:** Deeper exploration of one's way of being in the world and how different nuances that are not always evident can also affect your standpoint
- **Materials:** Pens; A4 (or larger) paper

Your Perspective

This activity helps us to recognise and consider how different aspects of our selves are performed in different spaces, and how we are perceived. Specifically, we'll be thinking about your role in research. Some parts of this activity may be difficult to do by yourself, and it is not intended to be shared as it can be viewed as personal. If you can't complete the exercise here, feel free to ask a trusted friend, family member or colleague to help you (this may be most relevant with the "perceived self" section).

Instructions

Ask the participants to divide a page into quadrants. In each quadrant, they should detail the following:

Quadrant 1: Performed self – what you want the world to see e.g., I am a PhD researcher, my manager is X, my colleagues are XYZ, I work 5 days a week doing...

Quadrant 2: Perceived self – what you think other people see (whether you think it is accurate or not) e.g., I wear a white coat so people think I am meticulous, I work in science so people think I am a boffin, I work with books so people think I'm boring...

Quadrant 3: Private self – what you know and keep hidden e.g., I worry I won't find anything significant, I broke an expensive piece of equipment and didn't say, at work I am often dreaming of becoming a beekeeper...

Quadrant 4: Hidden self – what is hidden even from you/what do you push to the back of your mind – e.g., I worry my research could be dangerous, I start looking forward to the weekend on a Monday morning...

Once they have completed each quadrant, encourage participants to reflect on how the different selves they have sketched relate to their standpoint.

Tips

There is scope to include discussion about people's reflections at the end of this activity if participants are preparedto share.

I stand with

10 Mins or Less	Participants: 2+	Facilitated: Yes	Online: No	In the Room: Yes

- **Activity type:** Disrupt - activities that will challenge their opinions
- **Purpose:** To highlight that researchers are more than their research topics; that similarities and differences exist on many (invisible) levels; that we all align ourselves to “everyday” groups.
- **Materials:** None

Instructions

This activity creates connections between researchers who are unfamiliar with one another. Announce one of the questions below, and give the researchers 30 seconds to organise themselves into groups. Once they have organised themselves, ask the researchers to look briefly at who they are with. Then ask another question and repeat the exercise with as many questions as you wish.

- Are you a pet owner? No; Dogs; Cats; Others; Combination.
- How many siblings do you have? 0, 1, 2, 3, 4, More.
- Do you have children? 0, 1, 2, 3, 4, More.
- What is your first language? English; Spanish; Lithuanian etc.
- What do you prefer, team sports or individual sports?
- Who makes your lunch? Myself; Someone I live with; I eat out every day; Other.
- How do you travel to work? On foot; Car; Public transport; Other.

Add other questions as you wish.

Tips

This activity also works well as an ice breaker.

For a more personal variation of this exercise, ask participants to imagine the floor of the room as a world map and locate themselves 1) where you were born; 2) ‘a place where you had an amazing experience; 3) a place you want to visit. Ask participants to share and explain their locations.

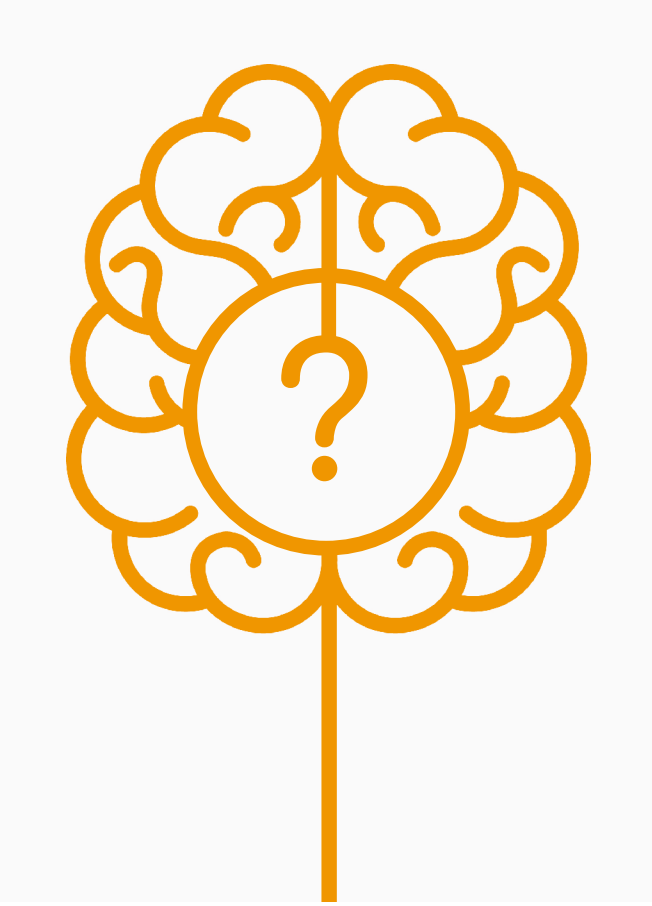
Creative Conversations for Responsible Innovation:
On Future Thinking

Research and innovation begin with questioning

Responsible research and innovation begin by expanding the questions asked beyond the research question itself to include how best to conduct the research; who should be included; anticipating how it may affect people, the planet, and society (positively and negatively), and how it may be misused, intentionally or otherwise.

Many of these questions relate more immediately to research conducted with direct applications in mind rather than blue sky or basic research. This does not mean that research focused on knowledge creation, or research that lacks an immediate application, is not useful or necessary, nor does it mean that thinking about the future impacts is unnecessary in these instances — the future is unpredictable and full of surprises. Reflecting on the future also requires researchers to consider who ultimately wields responsibility to stop any unintended, harmful impacts that derive from the outcomes of their research, and whether these potential negative impacts can be mitigated. Reflecting on the future is something that responsible researchers and innovators make time for at regular intervals throughout their research projects and careers.

The activities in this toolkit are designed to equip researchers with the skills to think about their own futures, the futures of those who will follow them, and how today's research impacts tomorrow's world. For some people, considering such personal and proximal futures may be difficult — our imagined futures are not always guaranteed. Facilitators should ensure that participants are aware that they do not need to share the more personal aspects that these activities touch on if they do not want to. Additionally, it may be difficult for researchers to realise for the first time the unintended negative consequences their hard work may have on people and on the planet. Facilitators should mention the support networks that exist within their institutions to tackle Responsible Research and Innovation-related problems if any arise.



Why do you think considering the futures we are creating through research is good practice?

"As meaning making beings we are all engaged in continuous processes of imagining and creating futures, whether this is something we consciously think about or not. The research we undertake in universities creates futures that can affect humanity and the planet in profound and often unexpected ways.

The diversity of human experience and existence is such that the futures created by research will be experienced in wildly different ways depending on who we are, where we live, our intersecting identities and the ways in which these identities impact on our access, power, economic and political realities. In many leading research institutions, particularly in Europe and the USA, the research community is predominantly white, male and from economically and socially privileged backgrounds, which directly impacts on the depth, breadth and diversity of their future imaginaries. While efforts are being made at institutional levels to create more inclusive research cultures, it is imperative that we develop tools and ways of thinking in the research cultures we have now to ensure that the futures we are creating allow everyone to flourish.

Responsible Innovation's call to anticipate these futures is not asking researchers to become crystal ball gazing psychics or "superforecasters" issuing accurate predictions. Anticipation in this sense is about consciously thinking about and using the future – acknowledging that through research we are engaged in creating futures and thinking critically and in an inclusive way about what these futures could be and how we might work now to make them better for everyone."

Vivienne Kuh, Lecturer in Responsible Innovation, University of Bristol

Recommended viewing to introduce future thinking

Video 1: Foresight 101. Designing our own futures | Stuart Candy | TEDxBlackRockCity (TEDx Talks, 2015)
https://youtu.be/PCEbPhbmbQY

Video 2: The future is dark (and that is a good thing) | Dr. Jane McGonigal | TEDxSkoll (TEDx Talks, 2017)
https://youtu.be/P5Z20RVq5dA

Autobiography

10-30
Mins

Participants:
2+

Facilitated or
Non-facilitated

Online:
Yes

In the Room:
Yes

- **Activity type:** Check – activities that will help self-assess their opinions or beliefs
- **Activity type:** Disrupt – activities that will challenge their opinions
- **Purpose:** To introduce participants to future thinking by considering their own futures. To consider what has shaped their research and what role their current research will play in their future lives.
- **Materials:** Pen and paper

Instructions

Ask the participants to write a Wikipedia entry for themselves, spanning from their birth to retirement. Encourage them to consider their lives in the context of what they think the world may look like in the future.

Ask volunteers to share snippets of their autobiographies. After these stories have been shared, ask participants about the importance of their current research in their autobiographies. Did they consider it part of a longer research career, or a stepping stone to other things? Did it become a large part of their future? Did the outcomes of their research feature? If so, how did they imagine being recognised or remembered?

Future descendants

10-30
Mins

Participants:
2+

Facilitated or
Non-facilitated

Online:
Yes

In the Room:
Yes

- **Activity type:** Disrupt – activities that will challenge their opinions
- **Purpose:** To connect researchers and their research with the wider world; to encourage researchers to think about who might be affected by the future outcomes of current research and to provide personal investment in those effects, and to highlight the complexity and inherent uncertainty of imagining the future.
- **Materials:** Pen and paper

Instructions

Ask participants to imagine their descendant. Reinforce that they do not need to choose a direct descendant for this exercise: they could be a niece/nephew, a grandchild, the child of a friend; the descendant can even be imaginary. Ask participants to write the name of their descendant and a date of birth on a piece of paper. Once this has been done, remind participants that they have little power over who their descendant becomes, or what they do with their lives. Ask participants to swap their piece of paper with someone new, each time adding a new piece of information to the page: the descendant's occupation (job or hobby), where they live (in the world or what kind of residence), a personal strength (e.g., patience, kindness, insightfulness, intelligence), and a character weakness (e.g., impatience, lack of empathy) and an ambition. Ask participants to return the pieces of paper to the person who started them.

If running this activity in isolation, split the group into pairs and ask each pair to talk about the wide-reaching goals of their research fields, and briefly discuss the possible impacts, positive and negative. Direct the pair to consider how both of their descendants could be affected by their research. If they do not think their descendant will be affected, who do they expect will be? You can invite participants to share aspects of their discussions when the group is brought back together.

Tips

This activity pairs well with the *Washing line of time* activity on the next page.

If running this activity as an online session, conduct the completion of the descendant profiles via the chat/messaging function and make use of breakout rooms when splitting participants into pairs.

You could encourage participants to keep their piece of paper somewhere at work so they remember the purpose of this exercise and the imagined possible impacts of their work on their imagined possible descendant.

Washing line of time

30 Mins or More | Participants: 2+ | Facilitated: Yes | Online: Yes | In the Room: Yes

- **Activity type:** Disrupt – activities that will challenge their opinions
- **Activity type:** Change – activities that will help implement small changes
- **Purpose:** To encourage participants to imagine the intended and unintended consequences of their research in the chronological context of their lives; making future consequences personal.
- **Materials**: If in the room - string and fastening for the washing line; pieces of card with the decades and future scenarios written on them; pens. If online - construct a timeline using a virtual whiteboard, with sticky notes for each decade and future scenario.

Instructions

At the beginning of the session, briefly explain the *Washing line of time* set-up. Begin the activity by asking participants to place a marker on the timeline for the year they were born and the year of a milestone birthday that falls within the timeline.

Instruct each participant to write down a scenario they could imagine happening at some point on the timeline. These scenarios can be based on scientific, technological or social advances, or world events. Encourage them to be creative — the future is unpredictable, so no idea is wrong. You can share some examples of your own making to help get them started. Ask participants to read their scenarios in turn, and then ask the group to discuss and vote on where it should be placed on the timeline. If the group is very large, you can split the participants into groups and assign them some scenarios to place on the timeline.

Ask participants to place a marker on the timeline with their name, the title of their project/ thesis/latest publication in the present year. Ask participants to imagine how their research might be used, adopted or transformed within the next 10 years, and place a marker on the timeline to reflect this. When will their aim be realised? Encourage them to think positively for this step. Next, ask participants to imagine further into the future. What is a positive outcome for society as a result of their research? What could be an unintentional negative impact arising from their research? Note that these scenarios do not need to play out directly from participants' research, but from how they imagine it could be used or adapted, and who is using/adapting it. Ask

participants to add markers to the timeline for both scenarios.

Give participants some time to look at the events on the timeline before concluding with a group discussion. Some useful questions to direct this discussion are:

- How much control do you have over future events?
- How much control do you have over the outcomes (positive and negative) of your research? When is the best time to start thinking about this? What can you do about it as a researcher?
- Do you think you may be impacted by the research that has been described on the timeline? Will your descendants be impacted?

Tips

We recommend a timeline covering at least 150 years, and that allows the person born earliest to place their year of birth on the timeline.

This activity may be more difficult for participants who are engaged in basic research as opposed to applied research. If so, suggest that participants think about their research field as a whole when considering the societal impacts.

This activity pairs well with the Future descendants and Puddle of consequences activities on pages 23 and 27, respectively.

If running this activity after *Future descendants*, ask participants to add their descendant to the washing line of time — mark their date of birth, and the year that reflects their imagined age. Ask them to reflect on how their descendant will be impacted by world events detailed on the timeline as well as the research impacts from the group. NB: this may require an extended timeline.

To extend this activity, aspects of the *Future headlines* activity in the On Your Research chapter can be utilised.

Additional resources

Civic Square (2020) *Re_ How to Be a Good Ancestor with Roman Krznaric*. 09 November. Available at: https://youtu.be/MRXAtrMod94 (Accessed: 24 May 2022).

Puddle of consequences

10-30 Mins

Participants: Individual

Facilitated or Non-facilitated

Online: Yes

In the Room: Yes

- **Activity type:** Disrupt – activities that will challenge their opinions
- **Activity type:** Change – activities that will help implement small changes
- **Purpose:** To remind researchers that all choices have an impact, and to consider the scale and type of impact they want their research to have.
- **Materials:** None

Instructions

Describe the *Puddle of consequences* as follows:

If you drop a pebble in a pond, the ripples reach wider and wider until they reach the edge. It's the same with everything you do, and you can imagine each ripple as representing impacts on a different group of people. Your actions can have impact on (at least) six spheres:

- **Private** – restricted to yourself. Tangible or intangible: feelings, internal thoughts…
- **Personal** – on your partner or your closest friends and relatives
- **Domestic** – everyone else in your circle: parents, grandparents, children, lodgers, flatmates, pets
- **Communal** – shared with a community, either geographically located or of common interest
- **National** – shared within a country, with varying opinions and perspectives of industries considered
- **Global** – globally felt impact

Before trying to apply this idea to research, a good way to explore the model is to apply it to a simple, everyday action. For example, invite participants to think about the impacts of their lunch choice. Go through the spheres of impact listed above and consider who their choices affected and how. Having prompts can help. If using the lunch choice example, you might ask: where did the food come from? Was it chosen for convenience? Does your choice of food hint at any moral leanings e.g., vegetarianism or veganism? Are you supporting local businesses by buying food there? etc. Give two minutes for any questions and reflections.

Once participants have had opportunity to explore the model, ask them to apply it to their own research and their research field. Ask them to think in more detail about who it will affect, how it will affect them, to what extent it will affect them, and on what scale. Invite a discussion about how much they individually have felt the impact of scientific, technological and healthcare-related advances in the past 50 years. How much does it affect them day-to-day?

Creative Conversations for Responsible Innovation:

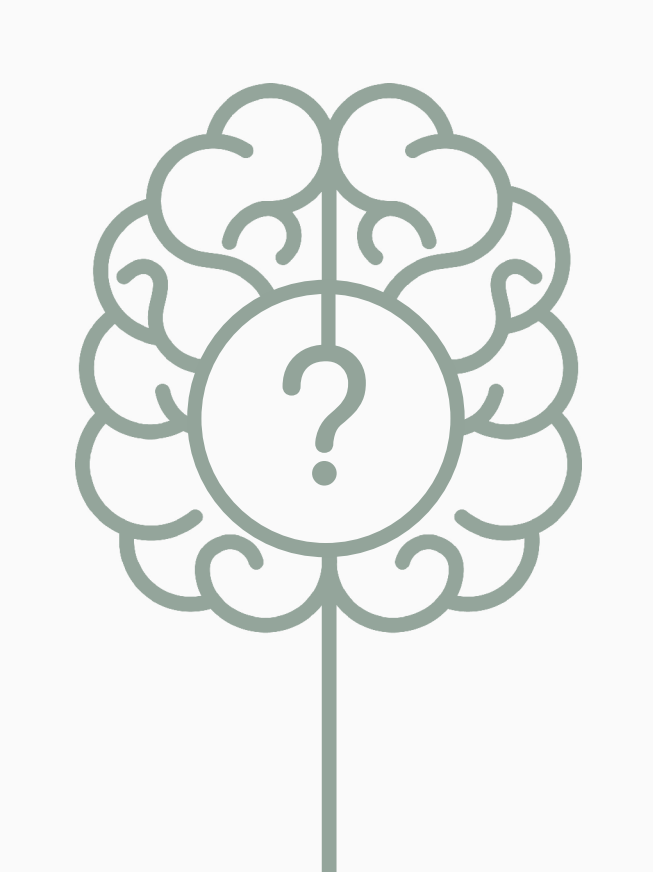
On Diversity

People working in research are different and diverse in myriad ways, including but not limited to age, gender, race, sexuality, nationality, research discipline and career stage.

Many of these characteristics have a relationship to the power individuals have, and both privilege and discrimination can be intersectional.

Talking about diversity can be uncomfortable – it can expose how many or how few privileges we have and how we compare to others; it can challenge how we see our accomplishments and behaviours; and it can expose differences between how people perceive the world to be now, how they want it to be in the future, and how they think we should get there. Yet thinking about, talking about, and reflecting upon the importance and value of diversity and difference in a research environment and wider society is an essential component of Responsible Innovation. This toolkit provides a selection of activities that enable people to do this, to reflect on what they can do to lessen the effects of unequal privileges, and to identify the benefits of collaborating with people who think differently and who have had different experiences and disciplinary backgrounds.

For these activities to be most effective, we recommend facilitators institute a co-designed Learner's Contract with the group. This should include an agreement that participants will respect the confidentiality of the group; can opt out at any point; and shouldn't share anything they aren't comfortable with. Participants should also recognise that the issues covered in this toolkit are the focus of a rapidly evolving international conversation, the most socially acceptable terminology and ideas are changing and are not universal to all places and cultures, and the group may contain people who are not speaking in their first language. They should assume everyone is acting in good faith and attempting to communicate their thoughts as best they can; and use differences in understanding as points for discussion rather than a cause of offense or conflict.



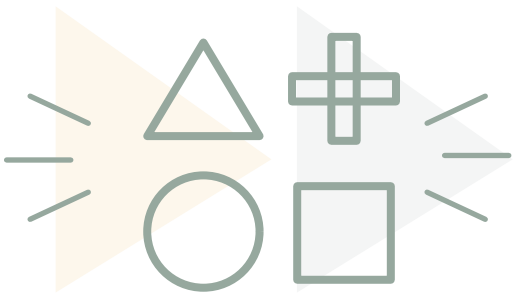
Why do you think consideration of gender and diversity is essential to good research practice?

“It is not just “good” research practice to include sex, gender and diversity in research design - it is increasingly seen as “research excellence”. It is crucial to consider both social and biological categories of difference to help make better science and to improve the quality of new knowledge.

Do we want science to be relevant to our communities and society? If so, we need to be concerned about how our science has a differentiated impact on biological sexes, women, men, girls, boys, and non-binary people, and how other categories of social difference intersect. We should be mindful of these issues at all stages of the research cycle: from the identification of a research problem, study design, collection, and analysis methods, to dissemination and public engagement.

This is not easy, especially if researchers do not feel comfortable, adequately trained, or knowledgeable about these aspects. One of the best ways to consider sex, gender and diversity in research is to bring together diverse experts who can work collaboratively. This community of a specific discipline experts and sex, gender and diversity experts can mutually learn from each other and integrate their knowledge into research to make excellent science.”

Dr Ola Thomson, Research Associate in EDI, Elizabeth Blackwell Institute, University of Bristol



Eye opening tasks

10 Mins or Less	Participants: 2+	Facilitated: Yes	Online: Yes	In the Room: Yes

- **Activity type:** Check – activities that will help self-assess their opinions or beliefs
- **Purpose:** To get participants to pay attention to very common situations and realise the power dynamics in place. The observations from the participants are the starting point for a discussion.
- **Materials:** None

Instructions

Share these tasks with the group ahead of the training session. Ask participants to undertake one or more of them beforehand and be prepared to share their observations/reflections during the session.

1. Think about which terms are gendered in your language and contribute to gender stereotypes. For example, in English, gendered terms include referring to a mixed group of people as “guys” or calling women “dear”. You might also observe terms where a person’s gender affects how their behaviour is described, for example an assertive woman being “bossy” while an assertive man is described as “taking charge”. Take note of any gendered language you hear someone use or when you use a term that is gendered.

2. Observe who takes the notes in meetings when there is not a designated note taker and who organises the meetings (i.e., sends the invites). Is it men or women who are doing most of this work?

3. Notice whose faces are in the room (or on the screen) in your meetings. Who do you see, thinking about diversity in all senses (i.e., gender, age, race etc.)? Note also what the meeting is about – does the meeting focus change who is in the room in terms of diversity? How do people’s characteristics relate to power? What is the influence of power in this situation?

During the session, encourage participants to share their observations and reflections.

Tips

This activity works best when participants are asked to observe their workplaces and think about these questions in advance of the discussion.

Additional resources

Emma (2017) 'You should've asked', *The Guardian*, 26 May. Available at: https://www.theguardian.com/world/2017/may/26/gender-wars-household-chores-comic?CMP=share_btn_link (Accessed: 05 May 2022).

Emma (2020) 'Benevolent Sexism', *The Guardian*, 13 August. Available at: https://www.theguardian.com/books/2020/aug/13/benevolent-sexism-a-feminist-comic-explains-how-it-holds-women-back?CMP=share_btn_link (Accessed: 05 May 2022).

Project Implicit (2011) *Gender-Career IAT and Gender-Science IAT*. Available at: https://implicit.harvard.edu/implicit/takeatest.html (Accessed: 05 May 2022).

Name game

10 Mins or Less

Participants: 2+

Facilitated or Non-facilitated

Online: Yes

In the Room: Yes

- **Activity type:** Check – activities that will help self-assess their opinions or beliefs
- **Purpose:** This activity is a gentle introduction to each other, going beyond the physical characteristics and labels that are attached to us and emphasising diversity. It works well as an icebreaker and to create deeper connections between participants.
- **Materials:** None

Instructions

We are all diverse. We all have an *equally* valid set of ideas and life experience behind us. Our names often suggest something about who we are and our background. They are so central to our identity, and normally the first information we volunteer about ourselves when interacting with others. Talking about someone's name can sometimes quickly unearth those more hidden aspects of our diversity.

Split the participants into groups of 3 and ask them to take it in 2 minute turns to discuss each group member's first name, last name/s, and nicknames. Where does their name come from? What does it mean? Who gave it to them? Who shortens it? How do they feel about it?

Remind the groups to ensure everyone has a chance to speak. After small group discussions bring the group back together and ask 2 or 3 volunteers to share interesting aspects of their discussion.

Tips

You could expand this activity with extra questions such as 'how do other people normally react to your name?', 'is there anything you hide about your name?', 'anything you try to make prominent?' or 'how do you change your name for different contexts and why?'

Just a minute


10 Mins
or Less


Participants:
Pairs


Facilitated or
Non-facilitated


Online:
Yes


In the Room:
Yes

- **Activity type:** Check – activities that will help self-assess their opinions or beliefs
- **Purpose:** To explore our awareness of, and experiences of, inclusion and discrimination in the workplace.
- **Materials:** None

Instructions

BBC Radio 4 hosts a game show called Just A Minute – players try to talk about a particular topic for 1 minute without hesitation, repetition or deviation. It's a fun game, but it's also a really good way to express what you know or can think of about a topic. The players who do best often make up a story or recollect an experience. Narrative makes things easier to remember and keep control of.

Put the participants in pairs. Ask them to each try to speak for a minute (without worrying about hesitation, repetition, or deviation) on one of the subjects below. They should time themselves and keep going for 60 seconds. It's not a test – just a challenge.

Tips

To extend this activity, allow longer than 1 min; ask the listener in the pair to try to remember as much as they can about what they hear and report it back to the group.

This activity can easily be adapted to other discussion topics.

Consult the facilitation tips in the introductory chapter for advice on facilitating sensitive topics.

Subjects

1. 'A time I considered diversity/equality/inclusion/feminism at work…'.
2. 'A time I saw inequality at work…'.

Hierarchy of masculinity

10-30 Mins	Participants: 2+	Facilitated: Yes	Online: Yes	In the Room: Yes

- **Activity type**: Disrupt – activities that will challenge their opinions
- **Purpose:** To spark discussion about the traits that are stereotypically associated with certain genders, how they manifest in different contexts, and how they affect everyone.
- **Materials:** Virtual whiteboard if online; pens and sticky notes if in the room

Instructions

Gender stereotypes - how we are expected to behave and "perform" in order to be perceived or recognised as feminine or masculine – are not fixed but depend on time and place. Gender stereotypes intersect in important ways with other aspects of identity, such as class and race, but to keep the discussion focused here we're focusing on gender. Gender stereotypes are binary, and people (most often women) can experience discrimination in binary terms. But behaving in particular ways can affect whether others perceive us as more or less of a man or more or less of a woman and being seen as more manly or more womanly can also result in discrimination. In addition, when people behave in ways that are not typically associated with their gender it can be perceived negatively. In many UK work settings, the attributes and behaviours that are most valued are typically associated with masculinity.

The participants are going to construct a hierarchy of masculinity using the whiteboard in the link (online)/sticky notes provided (in the room). First, they will add any attribute or behaviour that might be associated with being masculine e.g., assertiveness, financial independence, logical, analytical brain, etc.

After 5 minutes, ask each person to choose 5 attributes or behaviours that are valued highly in their workplace. Ask volunteers to share their choices and encourage observation of similarities and differences. See how easily they could position the set of attributes into a hierarchy of significance.

Next, ask the group to reflect on characteristics that are perceived positively/rewarded when displayed by men but negatively when displayed by women. If participants have experience, what happens, or they think what would happen if these behaviours and characteristics were displayed by non-binary people or trans people?

Facilitate discussion of participants' reflections. You may find these prompts useful.

- What are the consequences of these behaviours and attributes being a) encouraged and b) gendered? In what circumstances would this advantage or disadvantage you/ others and why?
- Does adhering to any of these stereotypes result in you being perceived as more/less of a woman or more/less of a man?
- Which of the stereotypes do you think are widely held in the UK or in other places you have experience of?
- Which of the stereotypes do you think have persisted over time, and which ones are fading/emerging?
- Are there any stereotypes here that you don't recognise?

Tips

It is easy for participants in this activity to become too focused on criticising patriarchy. It is also easy for some voices to be heard much more than others. Make sure you bring participants back to focus and to discuss it a bit more in depth.

This activity works well with Celebrate Difference on page 40.

Additional resources

Amrani, I. (2019) 'Modern masculinity', *The Guardian*, 14 August. Available at: https://www.theguardian.com/society/series/modern-masculinity (Accessed: 05 May 2022).

Bering, J. (2021) *Gender Doesn't Matter* [Podcast]. Available at: https://open.spotify.com/episode/27VUq6HE6NzUGnfQ0oy30z (Accessed: 05 May 2022).

Perry, G. (2016) *The Descent of Man*. London: Penguin Books.

Desert island

30 Mins
or More

Participants:
2+

Facilitated:
Yes

Online:
Yes

In the Room:
Yes

- **Activity type**: Disrupt – activities that will challenge their opinions
- **Purpose:** To encourage groups to reflect on the diversity assumptions they bring in the first place.
- **Materials:** None

Instructions

Place participants into groups of 3+. Set the scene:

You have been shipwrecked on a potentially habitable desert island. On the beach, you find a magic lamp that enables you to summon any three people (living, dead or fictional) to join you. (Facilitators at this stage have a choice: 1) leave the objective ambiguous, or 2) suggest groups decide whether they intend to try to escape or try to settle.) In the next 15 minutes, discuss and decide who you are bringing to the island. Be prepared to explain your reasoning to the whole group when we come back together.

Ask each group to explain who they chose and why, and then lead discussion about the groups' decisions - what were the most important considerations? Personality, skills, experience, or characteristics, such as age, skin colour, gender, sexual orientation? Have you assembled a diverse team? Encourage participants to reflect on what shapes their choices and the options who came to mind (for example, does television present more options of male survival experts than women?). After the discussion, ask groups whether they would like to reconsider any of their selections.

Tips

Use questions such as 'what do you think the point of this activity was?' and 'how does this concept manifest in your work/ teams?' to encourage further discussion on how this activity relates back to participants.

A status game

10-30 Mins	Participants: 2+	Facilitated: Yes	Online: Yes	In the Room: Yes

- **Activity type:** Disrupt – activities that will challenge their opinions
- **Purpose:** To reflect on how we and others "perform" status in our daily lives and consider different ways of interacting where status doesn't involve misuse of power.
- **Materials:** Chat function if online; pens and sticky notes if in the room

Instructions

Social status is the level of social value a person is considered to hold. More specifically, it refers to the relative level of respect, honour, assumed competence, and deference accorded to people, groups, and organizations in a society

We all have status – some earned, some assumed, some as a result of unfair inequality. Your status can change in different settings and sometimes it's up to you what you do with it. You can decide how you treat people of different status and give everyone an equal opportunity.

Tell the participants to imagine numbers 1-10 represent status.

Level 1 status is at the bottom of the heap. Might be lowly, humble, deferential. Might use that grovelling servitude to climb up the ladder; might think they should have higher status; might think that's all they deserve or could ever achieve.

Level 10 status has all the power. Can be conceited, arrogant, egotistical but they don't have to be. They can wield that status with kindness and generosity. If they know they have high status they can choose what to do with their power. Not everyone with high status plays high status – often great leaders and thinkers and powerful people seem very accessible and down to earth.

Give each participant a number (ensure you assign the full range, even if it means big differences) and tell them to imagine they are working in a big office block - management on the top floor and the maintenance staff in the basement. Imagine there is a shared intranet where messages come up for everyone to see and respond to. You will share these "intranet messages" with everyone, using the Chat function (if online), and should also decide upon and state the status of the person asking the question. Ask participants to respond in character, but without disclosing their status number to start with, so others can guess contributors' status.

Suggested intranet messages:

- Who do I need to speak to about repairing the photocopier?
- We have spare theatre tickets tonight. Anyone interested?
- Leftover conference sandwiches on Level 10. Help yourself.
- How much wine can we order for the Christmas party?

Now ask participants to reply disclosing the status number:

- The bins on Level 3 need emptying.
- Anyone order a taxi for the airport?
- We need a volunteer leader for a lunchtime community project.
- Can anyone recommend a good PA?
- Does anyone know how to light a fire?

Facilitate discussion of participants' reflections. Here are some useful questions:

- If you can see someone has less status than you, how do you treat them? And how do you treat yourself in that relationship?
- If you see someone has more status than you, how do you treat them?
- If you don't know how someone sees themselves, or other people see them, how do you treat them?

Tips

To extend this activity ask participants to have a go at writing a comment/question for others to react to. This can be done with or without status number.

Celebrate difference

10-30
Mins

Participants:
2+

Facilitated or
Non-facilitated

Online:
Yes

In the Room:
Yes

- **Activity type:** Change – activities that will help implement small changes
- **Purpose:** To celebrate different experiences and perspectives already present in people's lives; to acknowledge the benefits of the difference in the room; to reflect on what changes or actions people would like to implement; to learn from others' experiences.
- **Materials:** Virtual whiteboard if online; pens and sticky notes if in the room

Instructions

what value do you think different perspectives bring?

Start the conversation by posing the question 'what value do you think different perspectives bring?

Next, get each person to think about the different perspectives already present in their lives and using the whiteboard (online)/sticky notes (in the room) write down the aspects they would like to celebrate. Discuss with the group the many ways in which difference can be found e.g., ethnicity, gender, field of study, skills etc.

Ask participants: How do different perspectives contribute to your research team/work with colleagues?

Now get each person to reflect on the changes they could make to reduce inequality and get the most out of difference 1) personally, 2) for the project, 3) within their organisation and 4) societally. For example, individuals can raise their awareness of diversity and that of others, highlight use of gendered terms/labels when they hear them, be an active bystander; teams can create space for safe discussion; organisations can provide support and resources. Discuss contributions starting from the personal and moving up to the societal. Use the whiteboard in the link (online)/or sticky notes provided (in the room) to write these down.

Tips

This activity links well with activities in Creative Conversations for Responsible Innovation: On your Perspective.

Creative Conversations for Responsible Innovation:
On The Environment

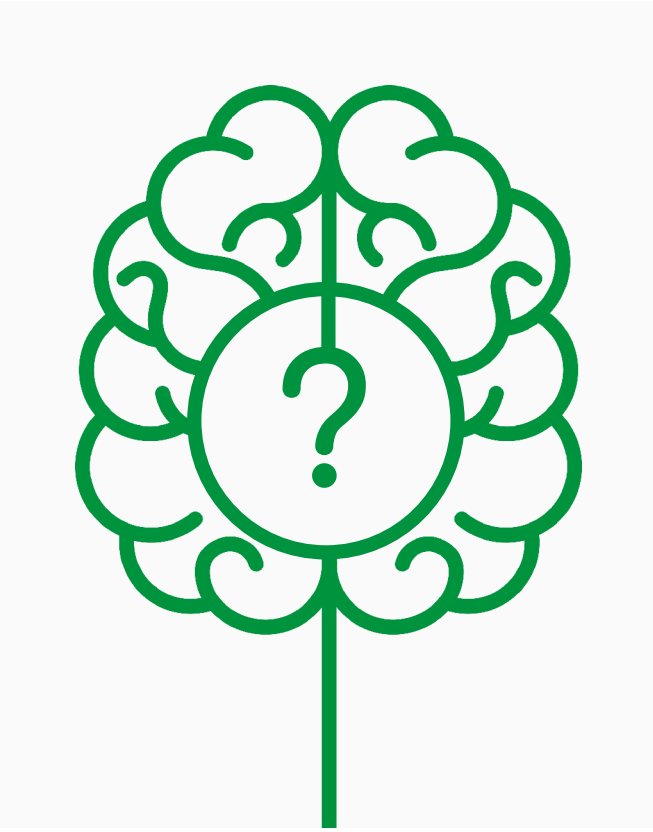
Research is not conducted in a vacuum, and it can't be disconnected from the context in which it takes place. We live on a planet that provides us with all we need to live, as well as all we need to do our research.

Resources are limited though, and every action we take — including as part of our research — has the potential to impact the planet, our home, or the other species that share this home with us.

Furthermore, we are currently faced with an unprecedented ecological and social crisis; if we are to tackle it, we need to change our approach to consuming resources and adjust our values and priorities accordingly. This could mean putting our skills to work finding solutions or changing some of the ways in which we do things so that they have less of a negative impact (or even a positive impact) on the Earth and all its inhabitants (humans and non-humans alike).

Just as we have had to adapt our research and research practices in the face of the Covid-19 pandemic, we can adapt them again to tackle the ecological crisis we are facing. Changing our mindset towards nature is crucial to acting responsibly as a researcher and as a human. There will be no research on a dead planet...

This toolkit invites researchers to think about the impact that their research and research practices may have on the planet. Through these activities, researchers are encouraged to consider nature as a stakeholder in their research and to think about how their skills could be useful in fighting this ecological crisis as well as other day-to-day actions that can be adopted to mitigate our impact on the planet.



Why do you think considering our relationship to the environment is important to research practice?

"For a long time, the rhetoric that separates humans from nature has been replicated. The resulting disconnection between us and the environment is both worrisome and dangerous, as it diminishes our empathy and sense of responsibility to act against the ongoing climate and biodiversity crises.

The maintenance and functioning of ecosystems result from uncountable, mostly invisible, interactions between multiple species, and of these species with their environments. We, humans, are part of this global interconnected network and recognising it is key for research practices. Asking ourselves "What are the negative socio-environmental impacts of our research and how can we mitigate them?" may be the first step to making us aware and taking positive actions.

As in healthy relationships between humans, healthy research-environment relationships are built on compromise, and it takes work to create a balanced exchange. This is crucial to avoid replicating the idea of nature as a simple provider of natural (and research) resources, as well as to be conscious of the impacts — whether environmental, social, and/or political — of our actions as researchers. It is also important to recognise that different peoples and cultures have historically built different levels of relationship with their environment. This is particularly so for traditional and Indigenous communities, who both bear the biggest burden of the current environmental crises, whilst having contributed to it the least."

Dr Filipe França, Lecturer,
School of Biological Sciences,
University of Bristol

Adopt a species

30 Mins or More

Participants: 1+

Facilitated or Non-facilitated

Online: Yes

In the Room: Yes

- **Activity type:** Disrupt – activities that will challenge their opinions
- **Activity type:** Change – activities that will help implement small changes
- **Purpose:** This activity encourages participants to pay attention to other beings in their surroundings that may be usually overlooked. By finding out about these other organisms we can start to care for them and take their interests to heart. It is an initial activity to start considering nature as a stakeholder in whatever we do.
- **Materials:** None

Instructions

Ask participants to go for a walk — this can be in the city — and pay attention to the different organisms that they see while they walk. Ask them to find a species that interests them and adopt it. Participants should find out as much information as they can about their adopted species (either researching it online or in the library, chatting to people, using apps, etc.). Reinforce that we have to know about this species to be able to care for it. Ask participants to become an advocate for their newly adopted species and share their findings with the group.

Tips

This activity works well when done before the session, so that participants can do it at a convenient time and ensure they have time to research their adopted species. Ask participants to share their feelings about finding a new species as well as some more descriptive facts about it.

Additional resources

Haraway, D. J. (2016) 'The Camille Stories: Children of Compost', in Staying with the Trouble: Making Kin in the Chthulucene. Durham: Duke University Press, pp. 134-168.

Love letter to the natural world

30 Mins or More	Participants: 1+	Facilitated or Non-facilitated	Online: Yes	In the Room: Yes

- **Activity type:** Check – activities that will help self-assess their opinions or beliefs
- **Purpose:** To take the time to pay attention to nature that surrounds us but that we may not usually notice. Reflect on our relationship with nature and what it means to us and to our lives.
- **Materials:** Pen and paper; envelopes

Instructions

Ask participants to write a love letter to anything in the natural world. This could be the planet, a tree, a material (e.g. stones in a wall), an animal, a species you advocate for, etc. Put the letter in an envelope and seal it. Write something enticing on the envelope (e.g. Love Letter for you to pick up!) and leave it somewhere that feels relevant for someone else to pick it up.

Additional resources

Hope A., et al. (eds.) (2019) Letters to the Earth: Writing to a Planet in Crisis. Glasgow: HarperCollins Publishers Limited.

Tips

Participants may feel that they don't want to leave a physical letter outdoors as this may be considered litter; they could find creative ways to share it, using social media or leaving it inside a book at the library, etc.

Nature as a collaborator

30 Mins or More	Participants: 1+	Facilitated or Non-facilitated	Online: Yes	In the Room: Yes

- **Activity type:** Disrupt – activities that will challenge their opinions
- **Purpose:** This is an exercise on standpoint theory where non-human organisms are one of the stakeholders. The aim of this activity is to identify positive or negative effects of our research on non-human organisms.
- **Materials:** Paper; coloured pens or pencils

Instructions

Ask participants to think of an organism they hold dear or are fascinated by. If they have previously done the "Adopt a new species" activity on page 44, they can choose their adopted organism. Ask participants to draw their organism and think of its needs and concerns.

Now ask them to consider the organism as a collaborator on their research project. Ask them to imagine taking the organism on a tour or their workplace and showing it the latest results. Ask participants to think about the following regarding their organism:

- Their thoughts: What do they think about your research?
- Their questions: What are they asking themselves? What are they asking others of their species? What are they asking you?
- Their ideas: What would they like to happen? How would they like you to react or change? (Remember that their idea of success may be different to yours).

Encourage participants to share. Did they consider any new thoughts, ideas or perspectives as a result of exploring the perspective of their organism?

Tips

Suggest that participants read Stefano Mancuso's *The bill of rights of the nation of plants* for inspiration and to help them think about what other organisms could "think". You could also share some of the other additional resources for this purpose.

Some fields of research may be more amenable to this exercise than other fields, but the point is to get them to think from a different perspective rather than to end up with some kind of action as a result of the exercise.

Additional resources

Casero, E. (2019) Protestas posthumanas. Available at: http://www.ernestocasero.com/ (Accessed: 22 May 2022).

Goldstein, M. (2011) 'Octopi Wall Street!', Deep Sea News, 10 November. Available at: https://www.deepseanews.com/2011/11/octopi-wall-street/ (Accessed: 22 May 2022).

Mancuso, S. (2021) The Nation of Plants. New York: Other Press.

To The Best of Our Knowledge (2020) Kinship With The More Than Human World [Podcast]. Available at: https://www.ttbook.org/series/kinship (Accessed: 22 May 2022).

Give and take

30 Mins or More	Participants: 2+	Facilitated: Yes	Online: Yes	In the Room: Yes

- **Activity type:** Disrupt – activities that will challenge their opinions
- **Purpose:** To help participants recognise and be aware of the resources that the environment/ natural world provides so that they can do their research; to recognise what we give back, or what we could give back.
- **Materials:** Pens and different coloured sticky notes if in the room; virtual whiteboard if online

Instructions

This is a guided activity. Ask participants to visualise themselves at work and respond to what you say by writing on different coloured post-it notes.

Read the following suggested script slowly, allowing time for participants to produce their responses:

Imagine yourself somewhere - in your favourite place at work. Now, we're going to make a record of everything you can sense. Open your mind to big things and small, look in, out, up and down. Think about more abstract things in your environment like the light or gravity... Also consider where each thing comes from in the natural world.

On the yellow sticky notes, write down what you can see and where. Use 3 words to describe each thing – e.g., tall wooden cabinet, tiny dust particle.

On the blue sticky notes, write down what you can hear and the source – e.g., a buzzing lightbulb.

On the pink sticky notes write down what you feel, internally or externally – e.g., the temperature of the room, an ache in your head.

On the green sticky notes, write down what you can smell or taste – e.g., coffee, chemicals.
Ask participants to share some of their notes with the group. Next, give them a few minutes to reflect on what they give back to the world. Ask for volunteers to share reflections.

Additional resources

Kimmerer, R. W. (2021) The Democracy of Species. London: Penguin UK.

Tips

The list of things that participants give back to the world may not be very long! Encourage them to include things such as 'noticing', 'caring', 'consumer choice', 'gratitude'.

If you have time to extend the activity, ask participants to pick one of the things from their list — probably an example from the yellow sticky notes would be easiest. Split the participants into pairs to discuss the object for five minutes: what it is made of, and how they would feel without that material? Ask them to imagine this is gone, not just in the workplace but in the world, and share with their partner how this makes them feel.

Collaborate for nature

30 Mins or More

Participants: 3+

Facilitated: Yes

Online: Yes

In the Room: Yes

- **Activity type:** Check – activities that will help self-assess their opinions or beliefs
- **Activity type:** Disrupt – activities that will challenge their opinions
- **Purpose:** The aim of this activity is to get participants to think about how they can put their skills to work to protect the environment, and to showcase how working in interdisciplinary groups can bring new ideas and perspectives.
- **Materials:** Pen and paper

Instructions

Split the researchers into groups of three or more to work to tackle one of the following issues: plastic pollution, loss of biodiversity, increase of CO^2 emissions.

Allow the groups 15 minutes to propose a potential solution to their chosen problem that could be implemented in the next 10 years. Encourage them to make use of their specialism if possible. Remind participants that they do not need to consider the practicalities in the idea stage, as this could hinder sharing of innovative, blue sky solutions at the outset. The groups should devote the last few minutes of their time to working on how best to pitch their idea to the whole group, focusing on why their solution will help fix the problem. If the group has time to do so, they can also work on a name for their solution and a media-savvy strapline.

Ask the groups to pitch their idea in turn. Allow 5 or so minutes per group. This includes time for the pitch as well as questions and comments from the other groups. Tell other participants in advance that their feedback should focus on the positive, and any criticisms should be constructive. Facilitate discussion with participants if necessary. Encourage them to reflect on how it felt to use their collective skills to tackle problems.

Tips

Make groups of researchers from different disciplines so that interesting collaborations can come up out of their skills. You can also let the researchers choose the groups but you could end up with groups of very different sizes, so if you decide to let them chose, it may be good to ask for at least two preferences and you have a bit of space to create the groups.

If you are working with a group that has previously done the activity “Adopt a species” on page 44”, you could encourage them to also ask questions from the point of view of their adopted species.

Groups can even suggest their own themes
to tackle.

What I can do

10-30
Mins

Participants:
2+

Facilitated:
Yes

Online:
Yes

In the Room:
Yes

- **Activity type:** Check – activities that will help self-assess their opinions or beliefs
- **Activity type:** Change – activities that will help implement small changes
- **Purpose:** This activity encourages participants to reflect on practical things they are already doing to reduce their impact on the environment as well as learning from others and taking new actions.
- **Materials:** None

Instructions

Ask the participants to spend a few minutes thinking about changes they have made and things they are already doing or could do to reduce their environmental impact in their personal lives as well as in a professional capacity. They can also include initiatives that they have heard of from colleagues or from people working in other areas/institutions, even if not research related but that could be applicable.

Create a shared list of actions and ask participants to select at least one new action to put into practice that has been inspired by this exchange.

Tips

This activity can also be prepared in advance, with participants coming to the session with a list of actions/initiatives.

To extend this activity help participants to think more about which action to choose by creating two lists. List 1: Rank the actions from easiest to hardest to deliver. List 2: Rank the actions from largest effect to smallest effect. Ask them to use the lists to inform their choice.

Additional resources

Ligozat, A-L. et al. (2020) ‘Ten simple rules to make your research more sustainable’ PLoS Computational Biology, 16(9), e1008148. doi: https://doi.org/10.1371/journal.pcbi.1008148

Creative Conversations for Responsible Innovation:
On Wellbeing

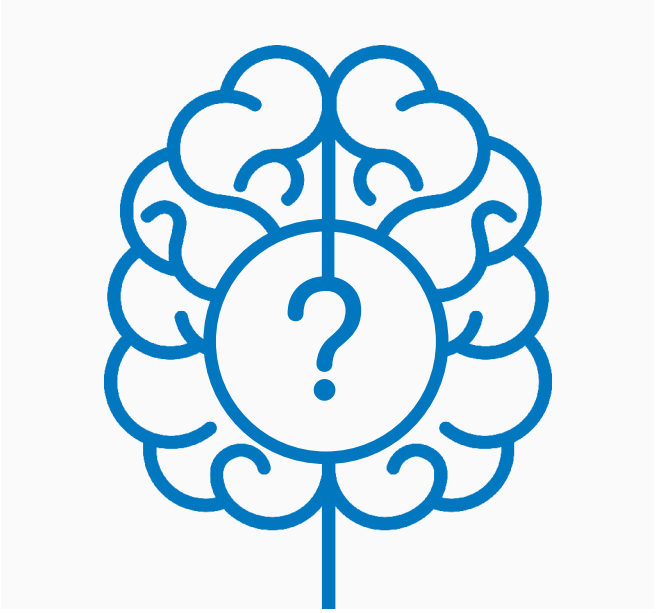
Research culture permeates every nook of academia. It dictates the expectations and values held by research communities, as well as influencing who is part of these communities and how they behave.

Research culture, however, is not set in stone: it can differ between countries, institutions, faculties, disciplines and research groups; it can change over time; and it can change when researchers collectively demand it.

The same research culture that results in world-class, impactful research can also tip the balance against good research practices. Unique pressures in academia — for example, the pressure to publish and the competitive research practices that result — can bring forth an unhealthy research culture that has profound negative impacts on researchers' wellbeing. Additionally, researchers may experience other individual struggles within or external to their research that impact their wellbeing. Such pressures can be felt by researchers on every rung of the academic ladder and may be recurrent throughout their academic careers. Ensuring researchers' wellbeing is intrinsic to supporting their research endeavours, making wellbeing a fundamental consideration of Responsible Research and Innovation.

Whilst the subject of this toolkit is wellbeing, its scope is limited to wellbeing in the context of research and the local research culture. Even if research is conducted collaboratively, the nature of research specialisms means that active research is often an individual pursuit. As such, individual researchers will be faced with challenges unique to their own projects, and no two researchers will be impacted by similar challenges in the same way.

The activities presented in this toolkit may provoke emotional responses, and facilitators should ensure a supportive environment for participants throughout their delivery. Additionally, facilitators should ensure that participants in each session are aware that they don't need to share anything they're uncomfortable with and allow them to opt out of discussions if they think it best for their wellbeing. Furthermore, in fostering open and honest discussions with participants throughout these exercises, facilitators are not expected to share their own wellbeing history and its relationship with academia, just as the same is not expected of participants.



Why do you think considering researchers' wellbeing is essential to good research practice?

People will produce their best work in environments where they feel supported and valued. Our wellbeing is therefore important in itself, but also an indication of how healthy (or otherwise) our working culture is.

Unfortunately, many aspects of academic research culture that might be considered "traditional" can actively work against this. For example, researchers can often work in isolation, making their work a lonely and often disempowering experience. We also tend to hear about other people's successes – whether they be publications or grants – but much more rarely about what we may think of as failures. But we are acutely aware when, for example, our papers or grants are rejected, or our studies don't work out as expected. Fortunately, there are things that we can do, irrespective of our career stage, to help with these issues. We can make sure that there are collective activities where researchers can come together – for example, journal clubs, writing retreats (which can be virtual!), and so on. We can also make sure that we all know who we can turn to for support – formally and informally. A lot of the rules and ways of working in academia can be implicit – things like a group handbook that lay out ways of working, including where we can turn to for support, can help with this. And we can be more open, collectively, about our setbacks as well as our failures. We have a Slack channel devoted to this, which allows us all to see that things like getting papers and grants rejected is a routine part of our jobs, and one that doesn't change as you become more senior! All of this can feed into better research. As well as our wellbeing being important in ensuring we remain able to do our best work, the things that promote wellbeing (like the examples given above) will also help to support us in our research. Being able to draw on the advice and support of others around us can help us to solve problems and design better studies, whilst recognising that others are having similar experiences to ourselves can remove the pressure that we can sometimes feel to make our work "perfect". So wellbeing is an important consideration in good research practice, both as something that influences how we do research, but also as an indicator of the environment we're creating that research takes place in."

Professor Marcus Munafò, Associate Pro Vice-Chancellor - Research Culture, Professor of Biological Psychology and MRC investigator, University of Bristol

Map to wellbeing

10 Mins or Less

Participants: individual

Facilitated: Yes

Online: Yes

In the Room: Yes

- **Activity type:** Check – activities that will help self-assess their opinions or beliefs
- **Purpose:** This activity equips participants with the tools to craft mindfulness into an everyday routine using the 'Five Ways to Wellbeing' outline developed by mental health charity Mind.
- **Materials:** Pen and paper

Instructions

Read the following script to the participants and ask them to follow along with the exercise.

Start by drawing a picture of your front door on one side of your paper, and your workplace/the university on the other. Between these two points, draw a line that represents the route from home to work. You will be adding five landmarks to your map. These landmarks will become the places where you can check off the charity Mind's 'Five Ways to Wellbeing'. They do not need to follow the order they are mentioned in.

The first landmark is somewhere ***to connect*** *e.g., where you might stop to say hello to someone or have a conversation. Second is somewhere* ***to be active****. For example, where you might get off the bus a stop early and walk, or perhaps a gym you visit on the way to work. Third is somewhere* ***to take notice****. Perhaps there is a bench you pass that you can sit on for five minutes and watch the world go by, or some street art to look at more closely, or interesting architecture you haven't seen before. The fourth landmark is somewhere* ***to give****. For example, a cafe where you can 'pay it forward' for those in need. The fifth and final landmark is somewhere* ***to learn****, like a library, a museum, or a book shop.*

Mention to the participants that the aim of this activity is to imprint positivity for when they next pass these places to help make sure they start or end their day in a calm mindset. Invite a discussion on how the participants felt during the activity.

Tips

Make sure to give sufficient time for people to fill in the map as the exercise progresses. The content of the script can be adapted to better suit the group if necessary.

Additional resources

Mind (2022) *Five ways to wellbeing.* Available at: https://www.mind.org.uk/workplace/mental-health-at-work/taking-care-of-yourself/five-ways-to-wellbeing/ (Accessed: 19 May 2022).

If your research was...

10 Mins or Less	Participants: Individual	Facilitated: Yes	Online: Yes	In the Room: Yes

- **Activity type:** Check – activities that will help self-assess their opinions or beliefs
- **Purpose:** To reinforce the idea that a person's outlook on their research can often be subject to circumstance, and to reassure that progress in research is not always linear.
- **Materials:** Pen and paper

Instructions

Metaphors are a useful linguistic tool to express your feelings and reframe your thinking. The metaphors you use to describe your research and your research progress can give an insight into your wellbeing.

Ask participants: *What would your research be and why if it was a...*

...song ...colour ...weather condition ...mode of transport ...holiday destination ...piece of clothing ...meal

Ask participants whether they would rather use another metaphor to describe their research e.g., say a researcher's response to the weather condition prompt was 'thunderstorm' — what would need to change for them to describe their research as a sunny day instead?

Remind participants that these answers are subject to change based on their current outlook (positive or negative) about their research, perceived progress, ability, confidence, and experience (as well as things unrelated to their research).

At the end of the exercise, ask ‘How did it feel to hear other people’s responses?’ and allow some time for reflection/discussion.
To expand the discussion, ask the participants if they would have given the same answer at the beginning of this research project, and if they expect it to stay the same or change as their research progresses. Ask participants to consider whether their colleagues or supervisors would give a more positive answer.

Tips

You could ask participants to write the notes in advance of the session so that researchers have more time to discuss them. You could also suggest that they write notes to different objects and compare them.

A note to your research tools

30 Mins or More	Participants: 2+	Facilitated: Yes	Online: Yes	In the Room: Yes

- **Activity type:** Check – activities that will help self-assess their opinions or beliefs
- **Purpose:** To give participants time to reflect on and express their feelings (whether gratitude, frustration, or indifference) about the tools and kit they use routinely in their research, and about their research as a whole.
- **Materials:** Pen and paper

Instructions

Ask participants to think of an object or tool they use routinely in their research, and then allow five minutes or so for them to write a note to that object/tool/method, centred on how they feel about/towards it. Next, split the researchers into pairs or small groups and direct them to discuss what they have written. They should consider the tone of their note, and whether the feelings they have written down correspond to their view of their research more generally. After five minutes of discussion, ask the pair to share whether they identified any common feelings e.g., frustration at unexpected kit breakages, or gratitude that the methods employed are useful, and whether this links to their feelings about their wider research.

Tips

You could ask participants to write the notes in advance of the session so that researchers have more time to discuss them. You could also suggest that they write notes to different objects and compare them.

CV in context

10-30 Mins	Participants: Individual	Facilitated or Non-facilitated	Online: Yes	In the Room: Yes

- **Activity type:** Disrupt – activities that will challenge their opinions
- **Purpose:** Research culture can encourage researchers to highlight successes and hide failures, thus distorting individuals' perceptions of their relative success. This activity cements achievement within context and serves as a reminder that researchers are human; success in research is subjective and often not continuous or consistent, and that our lives outside work can affect our working lives.
- **Materials:** Pen and paper; Unofficial Stories from Growing Up In Science; researchers' CVs

Instructions

Ask participants to read some of the Unofficial Stories from Growing Up In Science prior to the session and see if they relate to some or feel inspired by others. This collection showcases summaries of researchers' career histories side-by-side with personal biographies which contextualise their progression and successes.

To begin this activity, ask participants to focus on one or two items on their own CV and think about what was happening outside of work at the time. It may also be useful for participants to think about what was happening at work too: how many jobs/roles, paid or voluntary, were they juggling at the same time? What support were they receiving from other people? Ask them to consider the effect their personal circumstances had on their success. Invite the participants to write down their Official Story (i.e., the item listed in their CV and their Unofficial Story) and to share both stories in a group discussion to conclude the session.

Tips

Remind participants that they do not need to share their unofficial stories if they don't want to.

In the group discussion, you could encourage them to discuss a healthy work-life balance, stressing that this balance is not consistent over time – it should change depending on your needs. You could also discuss expectations and pressures in academia: things that are normalised in the research culture can be toxic, and research institutions, like all other workplaces, should be supportive and flexible in response to extenuating personal circumstances, and that taking breaks for your wellbeing is a normal and healthy thing to do.

This discussion pairs well with the *Researchers' Manifesto* activity on the next page.

Researchers' manifesto

30 Mins or More	Participants: 2+	Facilitated: Yes	Online: Yes	In the Room: Yes

- **Activity type:** Change – activities that will help implement small changes
- **Purpose:** To encourage researchers to reflect on the research culture at their institution and the expectations and pressures they are subject to in their roles, and to consider what changes they would like to see in their research environment and how they would like to be able to do research.
- **Materials:** None

Instructions

This activity is based on an activity developed by Atelier des Jours à Venir for a reflexivity toolkit as part of the PERFORM EC project.

Select an example researchers' manifesto from the additional resources provided and ask participants to read it prior to running this activity. Split the participants into groups, and, taking inspiration from the example manifesto, ask them to write their own researchers' manifesto. Later, bring the groups back together to share what they included in their manifestos.

Tips

See PERFORM's Values in Science researcher toolkit for examples of questions that can help frame discussions in this activity.

It can be useful to collate the participants' manifesto statements into one manifesto to share after the session and encourage them to share it with their colleagues and friends in other faculties.

You can also encourage researchers to write a manifesto with their colleagues about the way they want to work together on a particular project. When the manifesto is written, it can even become a project contract, signifying everyone's commitment to attempting to work to these ideals.

Additional resources

Munafò, M. R. et al. (2017) 'A manifesto for reproducible science', *Nature Human Behaviour*, 1(0021). doi: https://doi.org/10.1038/s41562-016-0021

PERFORM (2018) *Values in Science*. Available at: http://www.perform-research.eu/wp-content/uploads/2018/09/19005_PERFORM_A4-document_04.9_Values-in-Science.pdf (Accessed: 19 May 2022).

The Critical Engineering Working Group (2017) *The Critical Engineer Manifesto*. Available at: https://criticalengineering.org/ (Accessed: 19 May 2022).

The Slow Science Academy (2010) *The Slow Science Manifesto*. Available at: http://www.slow-science.org/ (Accessed: 19 May 2022).

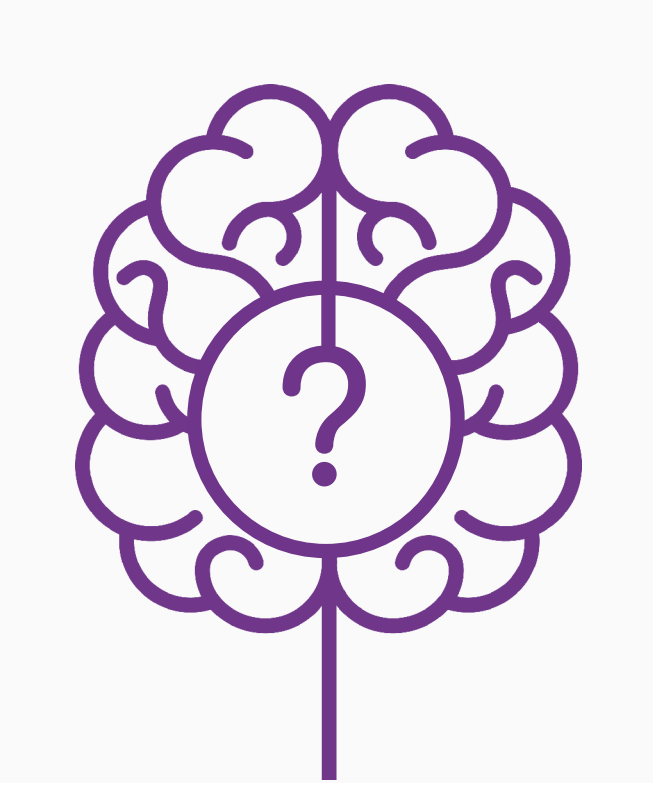
Creative Conversations for Responsible Innovation:
On Your Research

Other toolkits in this series identify various thematic threads relating to Responsible Research and Innovation that are relevant to all research.

However, every research field and project will have its own specific issues and challenges. These could relate to the participants in the research; the tools or methodologies being used; the impacts; the composition of the research team, or to the institution's research culture, to give just a few examples.

The activities in this toolkit provide researchers with tools to reflect more deeply on their own particular research and to challenge them to consider the potential impacts from different angles and perspectives.

It's important to keep in mind that exploring these myriad impacts can raise issues that researchers have the power to tackle or to highlight problems that are currently beyond their influence to solve. If the latter is true, it is okay that the problem cannot be tackled by the individual researcher who has identified it, and it is okay if the problem cannot be solved immediately — it is rarely one person's responsibility alone, and system change takes time. It's also important to think collectively about potential routes to share and tackle issues relating to responsibility in research and innovation if any arise. Some institutions may have formal channels in place through which to report such issues, and others may not. Facilitators should mention the systems, processes and support networks specific to their institution when applicable. Crucially, there are lots of researchers internationally conducting interesting and pioneering work in Responsible Research and Innovation who may be able to provide guidance if no official systems are in place.

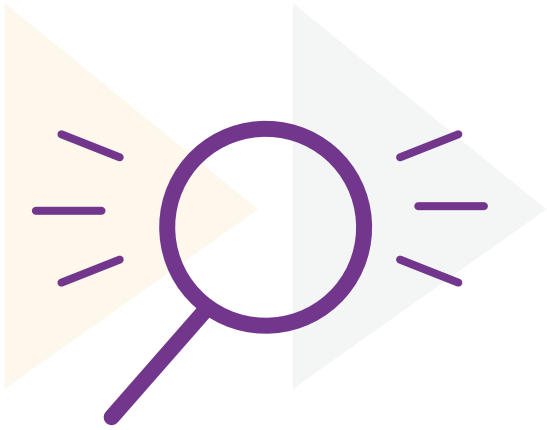


Why do you think reflecting on your research is essential to good practice?

“When we reflect on our research we give ourselves the time and space to think about broader consequences. Stopping and reflecting is often when we realise why our research matters, not just to our immediate community of professional colleagues, but to the wider world.

Take time to discover what the broader and deeper consequences of your work might be and could be in the future. Wonder whether everyone who needs to hear about your results has heard the news. Consider whether you know what others think about what you are doing; other people’s perspectives might change your view on the significance or potential of your research. This might highlight strengths, weaknesses, applications or risks that you had never thought of. As well as reflecting on the present and future, it is helpful to reflect on the past; how did you get here? Are there things you can do better in future? Reflecting often leads to changes in how we choose to spend our time. You might realise that you want to communicate more with a wider range of people about your research processes or your findings. This can only drive up the quality, relevance and long-term value of your work.”

Professor Claire S. Grierson,
Head of School, School of Biological Sciences, University of Bristol



Photos from the future

10-30 Mins	Participants: 1+	Facilitated or Non-facilitated	Online: Yes	In the Room: Yes

- **Activity type:** Check – activities that will help self-assess their opinions or beliefs
- **Activity type:** Disrupt – activities that will challenge their opinions
- **Purpose:** To get researchers to reflect on the impact their research could have on the place they live in and what could change in the future in their surroundings as a result.
- **Materials:** Camera (phone camera is totally fine)

Instructions

Ask participants to go on a walk, observe their surroundings and take a picture of something that could change in the future as a consequence of their research. Ask them to share their pictures and stories.

Tips

This activity works well if the participants do it in advance of the session. It can also be done during a break, as it gives people the chance to get outdoors and disconnect.

Rate your research

10-30 Mins or Less	Participants: 2+	Facilitated: Yes	Online: Yes	In the Room: Yes

- **Activity type:** Check – activities that will help self-assess their opinions or beliefs
- **Activity type:** Disrupt – activities that will challenge their opinions
- **Purpose:** This is a gentle introduction for participants to start thinking about the specificities of their research and how they feel about it. It encourages them to think of some more difficult aspects as well as what makes it unique, and to form value judgements about their own work before considering those assumptions from different perspectives. It works well as an introduction to some of the following activities.
- **Materials:** Online poll if online; pen and paper if in the room

Instructions

Ask participants to rate their research on a scale of 1-5 considering the following adjectives: Unique, Interesting, Beautiful, Controversial, Useful, and Difficult.

Look at the results as a group and ask participants to reflect on the following:

- Which words does your research need to score highly on to be worth doing?
- What did you understand by ‘Difficult’?
- How does ‘Controversial’ affect your practise?
- How ‘Useful’ and useful to who?
- Can you describe where the ‘Beauty’ exists?
- Is ‘Unique’ good?
- Who is interested? Why are they interested?

Tips

Make sure participants understand that the adjectives exercise is not a judgement, it’s personal and they don’t need to share it if they don’t want to. The terms may be a bit ambiguous; ask participants to use their own interpretation.

It works well to ask participants to register their number (anonymously) on an online poll so that they all see the general results.

Tarot cards of tech

30 Mins or More	Participants: 1+	Facilitated or Non-facilitated	Online: Yes	In the Room: Yes

- **Activity type:** Check – activities that will help self-assess their opinions or beliefs
- **Activity type:** Disrupt – activities that will challenge their opinions
- **Purpose:** To get participants to think of potential impacts of their research through a set of different provocations that encourage them to reflect on different scenarios.
- **Materials:** The Tarot Cards of Tech (Artefact, 2017)

Instructions

Ask participants to take a look at The Tarot Cards of Tech and to choose a couple of them that could apply to their research. Encourage them to choose a more positive and a more negative one and to think about them for a few minutes.

Put the participants in pairs or groups and ask them to discuss the selected cards in relation to their research.

Come back as a whole group and share. Some questions that you can use to encourage discussion: Which cards did you use? Which questions felt useful? What considerations did it raise? Did it make you think about new things or familiar ground?

Tips

It is important for researchers to have a bit of time to think about the cards they select. This is something that you can ask them to do before the session or make sure you give them a bit of time during the session. You can also encourage them to reflect on some of the other cards in their own time.

Enhance, retrieve, obsolete, reverse

30 Mins or More	Participants: 1+	Facilitated or Non-facilitated	Online: Yes	In the Room: Yes

- **Activity type:** Check – activities that will help self-assess their opinions or beliefs
- **Activity type:** Disrupt – activities that will challenge their opinions
- **Purpose:** To get participants to think about the potential impacts their research could have in society by looking at what could change or disappear as a result of their research. To highlight consequences are not necessarily linear or intended.
- Materials: Pen and paper

Instructions

Canadian philosopher Marshall McLuhan devised a model for thinking about the impacts of new innovations. His model is called the McLuhan Tetrad and it's based on the idea that every new innovation has four major types of impact on the way society organises and operates:

1. It enhances something
2. It retrieves something
3. It makes something obsolete
4. It reverses something (when pushed to extremes)

Here is an example that you can share with the group: the smartphone.

What has the smartphone enhanced?
Access to internet, real-time availability, innovation in apps

What has the smartphone retrieved?
Taking photos, exchanging written comms, basic video games

What has become obsolete by the smartphone?
Address books, MP3 players, point-and-shoot cameras, domestic radios, Sat Navs, printers – docs are available, maps, tickets, meeting people, encyclopaedias, eye contact, remembering things (information, phone numbers)

What has the smartphone reversed?
The biggest reversal is psychological. It can end up distancing us when it was designed to bring us together.

You can find a more detailed explanation of this example in the article referenced in the additional resources section below.

Ask the participants to work together, in pairs or small groups, to apply the tetrad to each of their research projects.
Bring the group together again and ask them to share what they have discussed.

Here are some suggested questions to get the discussion going:

- Did anything new come out of using this tetrad that you hadn't considered before?
- Did your group think of anything about your research that you hadn't considered yourself?
- Was anything particularly encouraging or discouraging?
- Which of the sections raised most interesting things?
- Which sections were more or less useful to think about?
- Do you think some research topics would find it easier to think about certain sections more than others?

Tips

You can use the Questions Concerning Technology by L.M. Sacasas (2021) referenced below to deliver a more guided version of this activity.

Additional resources

Adam, I. (2016) 'What Would McLuhan Say about the Smartphone? Applying McLuhan's Tetrad to the Smartphone', *Glocality*, 2(1), pp. 1–7. doi: http://dx.doi.org/10.5334/glo.9

Sacasas, L. M. (2021) *The Questions Concerning Technology*. Available at: https://theconvivialsociety.substack.com/p/the-questions-concerning-technology?s=r#details (Accessed: 24 May 2022)

Future headlines

10-30 Mins	Participants: 2+	Facilitated: Yes	Online: Yes	In the Room: Yes

- **Activity type:** Disrupt – activities that will challenge their opinions
- **Purpose:** To get participants to reflect on the best and worst impacts that could arise from their research in the future and to get other, sometimes extreme, perspectives.
- **Materials:** Pen and paper

Instructions

Explain to the participants that in this exercise they are going to consider the best and worst possible headlines that there might be relating to their research in the future.

Ask them to work independently to write four headlines that relate to their research: both the best and worst headlines 10 and 50 years in the future. The best and worst headlines are subjective – one person's good news might be terrible for someone else. You can also frame it as 'what headline would you most like to see?' and 'what would you least like to see?'.

Ask participants to volunteer positive headlines. Select one and request permission from the researcher to be questioned more closely. Explain that we are all now going to be members of the press at a press conference the day after this story has been published.

The researcher does not have to reply to every question posed and can say 'No comment' to move on to the next question.

Participants should think about what kind of press they are. They could be from a gossip newsfeed or respectable broadsheet. It would be good to get questions from across the field: specialist publications, online groups, and so on. When they ask a question, they should mention the publication. For example: 'I'm from the Beano, what does this mean for kids that just want to have fun?'

Do the same again with a negative headline or with another positive one.

Tips

You may want to remind the participants that this should not be considered personal or judgemental. Moreover, members of the press should celebrate research as well as offer critique. Whatever the imaginary headline, it hasn't happened and if it did it wouldn't be their responsibility alone. If participants struggle to think about it, you can point them to the "scandal" card from The Tarot Cards of Tech for inspiration.

If conducting this activity online, ask participants to post questions in the chat function instead of verbally. The interviewee can then reply (verbally) to the questions they can or want to answer as they see them.

Five fingers on a hand

10 Mins or Less

Participants: 1+

Facilitated or Non-facilitated

Online: Yes

In the Room: Yes

- **Activity type:** Check – activities that will help self-assess their opinions or beliefs
- **Activity type:** Disrupt – activities that will challenge their opinions
- **Purpose:** To help participants remember different groups that could be impacted by their research and reflect to what degree they are engaged in it.
- **Materials:** Pen and paper

Instructions

Explain that our hands are an ever-present tool we can use to remind us that multiple groups of people might be affected by our research. Ask participants to think about which groups are affected by their research and then which groups are heard in their research, in the following order: working from the pinkie to the thumb, the pinkie represents the weakest in society; the next finger (where people may wear a wedding ring) represents the people closest to the researcher; the longest finger represents the most powerful; the pointing finger represents the leaders and teachers; and the thumb represents themselves.

Tips

To extend this activity, you can encourage participants to use the other hand to identify groups that are not covered with the first hand e.g., Nature, people with different cultural background, people from different countries/continents, a group specifically affected by their research etc.

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