Responsible Research and Innovation

This section introduces Responsible Research and Innovation (RRI) as defined by the European Commission and explores two key aspects of RRI – public engagement and anticipation of possible applications of research.

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Introduction to RRI

Responsible research and innovation is 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.

Responsible Research and Innovation (RRI) implies that societal actors (researchers, citizens, policy makers, business, third sector organisations, etc.) work together during the whole research and innovation process in order to better align both the process and its outcomes with the values, needs and expectations of society.

In practice, RRI is implemented as a package that includes multi-actor and public engagement in research and innovation, enabling easier access to scientific results, the take up of gender and ethics in the research and innovation content and process, and formal and informal science education.

EC Horizon 2020: Responsible Research and Innovation

What is public engagement?

Public engagement describes the myriad of ways in which the activity and benefits of higher education and research can be shared with the public. Engagement is by definition a two-way process, involving interaction and listening, with the goal of generating mutual benefit.

National Coordinating Centre for Public Engagement. What is public engagement?

The need for scientists to engage publics about possible futures

Scientists must communicate with publics to inform them of future possibilities inherent in that research. And the communication must be two way. Publics must communicate with scientists how they feel about these future possibilities. This type of dialogic interaction is intended to shape research trajectories, i.e., various parties, researchers, investors, publics, other stakeholders are 'mutually responsive' to one another's concerns such that overall research systems adjust... There are of course many difficulties in facilitating this type of 'mutually responsive' science communication. One of the difficulties is that none of the parties precisely know the future and so they must negotiate between various images of the future that different parties have.

Reinsborough, M. (2017) Science fiction and science futures: Considering the role of fictions in public engagement and science communication work. *Journal of Science Communication, 16 (4).*

PERFORM researcher reflection

> "When we look back in 2067 at research carried out in 2017, what will we think about the choices we made as scientists? How will our research have been applied? Our research is fed into an imperfect political system... what responsibility do we have as the individuals in the lab to be controlling the research we do, and managing its application?"

Activity

Future thinking

This activity is designed to help researchers consider possible applications of their research and think about who may be affected by those applications. It demonstrates how the applications of science, and unintended consequences, can impact every part of society and all of our lives as citizens. It opens up discussion around the responsibility of science to engage with stakeholders and wider publics about these issues.

This activity is best done in groups of four or more.

1. Ask everyone to reflect on the following question and then share their responses: What is your purpose and motivation for carrying out your research?
2. Ask everyone to consider where their research might take us in the future and list all the possible applications that they can think of. Share these responses.
3. Invite everyone to reflect on and share their responses to the following questions:
    - Who could use these applications?
    - Could anyone be empowered to use, modify or adapt the innovation or is it the kind of innovation that will be protected by patents and owned by private companies?
4. As a group, select one of the potential applications of one of your group's research.
5. Imagine a 'future scenario' - the world 50 years in the future. Ask each person in your group to represent a different 'level' at which the application is impacting the world. Make sure possible benefits and harms are considered at each level.
    - Individual level – how does it impact people's daily lives?
    - Societal level – how does it impact people's work and society overall?.
    - National level – how does it impact laws and policy at a national level?
    - Global level – how does it impact global policy and international affairs?
6. Invite responses from each 'level'.
7. Reflect on the activity, using the following questions to guide discussion:
    - Did the activity help you become aware of potential impacts and implications that you had not previously considered?
    - Were there any groups of people in the 'future scenario' who were impacted by the innovation that you had not previously considered?
    - Did this activity change how you think about who should be consulted and engaged about your research?
    - What are the potential issues that could arise if you don't engage publics in your work?
    - What might some of the challenges be, for researchers and for the public, in doing public engagement?

This activity is adapted from the PERFORM toolkit for teachers. If you are interested in running this activity with young people, you will find that activities in the teacher toolkit are designed for this purpose.

References and additional resources

- EC Horizon 2020: Responsible Research and Innovation, https://goo.gl/ghzLpK
- National Coordinating Centre for Public Engagement. What is public engagement? https://goo.gl/SpZPSA
- Priest, S. (2014). Critical Science Literacy: What Citizens and Journalists Need to Know to Make Sense of Science. *Bulletin of Science, Technology & Society, 33 (5-6), 138 – 145*. DOI: https://goo.gl/35e5GQ
- Reinsborough, M. (2017) Science fiction and science futures: Considering the role of fictions in public engagement and science communication work. Journal of Science Communication, 16 (4). https://goo.gl/x87pr9
- RRI Tools. Self-reflection tool. https://goo.gl/hKMyWf

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