Public Engagement with Science

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Communication and Engagement

Jargon

Due to the multifaceted nature of science communication and engagement activities as well the rapid evolution and advancements in S&T, a variety of terms are used to describe them.

Communication and Engagement Jargon

Science Communication

"SCIENCE COMMUNICATION (SciCom) may be defined as the use of appropriate skills, media, activities, and dialogue to produce one or more of the following personal responses to science (the vowel analogy):
Awareness, including familiarity with new aspects of science
Enjoyment or other affective responses, e.g. appreciating science as entertainment or art
Interest, as evidenced by voluntary involvement with science or its communication
Opinions, the forming, reforming, or confirming of science-related attitudes
Understanding of science, its content, processes, and social factors Science communication may involve science practitioners, mediators, and other members of the general public, either peer-to-peer or between groups. "

Burns, T. W., O'Connor, D. J., & Stocklmayer, S. M. (2003). Science communication: A contemporary definition. *Public Understanding of Science*, **12**, 183–202.

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 Co-ordinating Centre for Public Engagement (2018, Oct 16). *What is Public Engagement?* Retrieved from http://www.publicengagement.ac.uk/about-engagement/what-public-engagement

Citizen Science

"Citizen science typically refers to research collaborations between scientists and volunteers, particularly (but not exclusively) to expand opportunities for scientific data collection and to provide access to scientific information for community members.
As a working definition, we offer the following: ***projects in which volunteers partner with scientists to answer real-world questions."***

Cornell Lab of Ornithology (2018, Oct 16). *Citizen Science.* Retrieved from http://www.birds.cornell.edu/citscitoolkit/about/definition

Knowledge Exchange

"any activity that involves engagement with businesses, public and third sector services, the community and the wider public, which involves the sharing of best practice, and which can be monitored for funding purposes."

Illingworth S, Redfern J, Millington S and Gray S. What's in a Name? Exploring the Nomenclature of Science Communication in the UK [version 2; referees: 3 approved, 1 approved with reservations]. *F1000Research* 2015, **4**:409 (doi: 10.12688/f1000research.6858.2)

Outreach

"a one-way discourse, in which scientists communicate their research to the general public, with particular focus on school children and young people."

Illingworth S, Redfern J, Millington S and Gray S. What's in a Name? Exploring the Nomenclature of Science Communication in the UK [version 2; referees: 3 approved, 1 approved with reservations]. *F1000Research* 2015, **4**:409 (doi: 10.12688/f1000research.6858.2)

Responsible Research and Innovation

"An approach where 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."

NUCLEUS Project (2018, Oct 16). *Responsible research & innovation*. Retrieved from http://www.nucleus-project.eu/rri/

Leverhulme Research Centre for Forensic Science University of Dundee

LEVERHULME TRUST

Science Communication and Public Engagement

From Scientific Evidence to Action

"Although people can choose not to do science, they cannot choose to ignore it. The products of science permeate their lives. […]

"Taxpayers fund a significant portion of scientific research, which allows researchers to pursue novel and innovative questions." (Forrester)

"Just about **every public policy issue** has a scientific component, whether it's **hidden or obvious**; but the **facts and insights science** brings to deliberations can often go unaddressed. This happens because elected officials tend to shy away from science and because scientists shy away from politics with the end result being laws based on incomplete information." AAAS

"I believe what we do
- and by 'we' I mean humanity as a whole
over the next five years -
could well determine the future of humanity.

This is a critical time."

(Sir David King)

Science Communication **improves the relationship between science and society**. Engagement between scientists and diverse audiences **helps science be more responsive to societal priorities** and **increases the chances that science will be used for public decision-making**.

Science Communication & Public Engagement

WHY?

- To increase awareness of the value of research to society
- To promote critical thinking & reduce scientific misinformation
- To build political and public trust and support for science and scientists
- To develop evidence-informed policies (particularly pertaining to human and planetary health & well-being)
- To receive new perspectives on research – new research direction/question/ ethical considerations
- To set research priorities that address the need of the people
- To inspire the next generation of researchers
- **As a scientist or an organisation funded by government funds, you are accountable to the tax payer, the public. They have the right to shape the research agenda and have a say on how discoveries are used.**

Three models of scientist-public interaction in science communication

- The Deficit Model

This model assumes that public skepticism about science is caused by the public's lack of relevant knowledge

- The Contextual/Dialogue Model

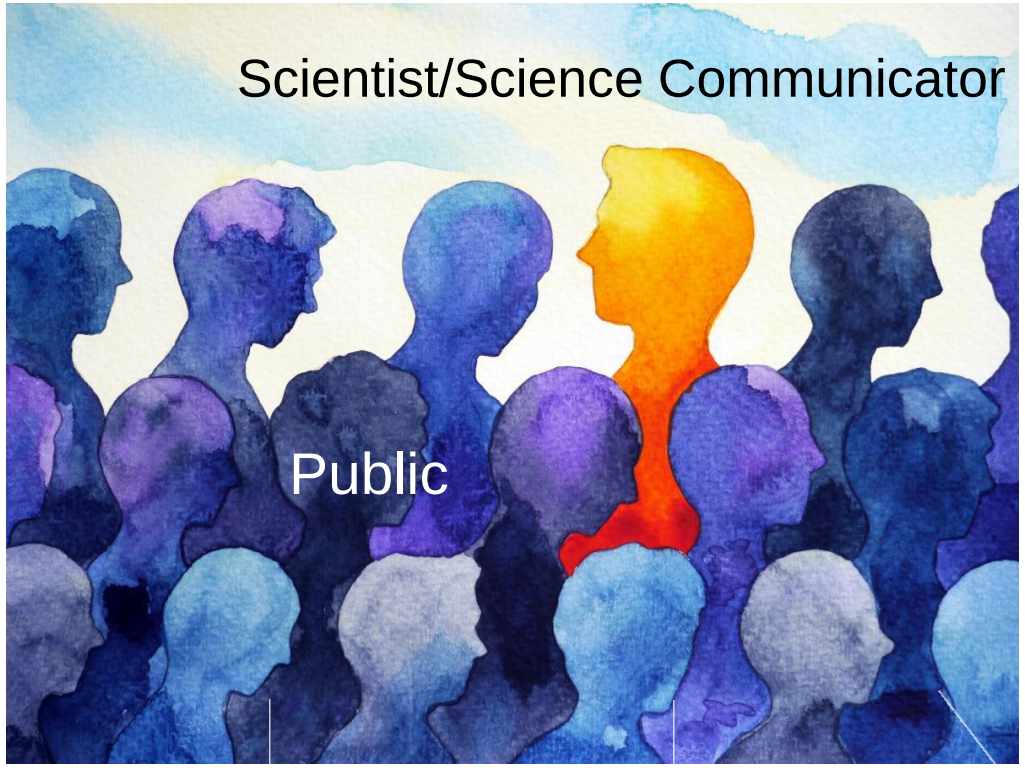
This model of science communication is more conversational; recognizes that informal discussions with the public can result in learning by both the public and experts.

- The Participation/Engagement Model

Involves collaboration between the scientists and the public towards a common goal

Engaging with Non-Specialist Audiences/Public

WHO?



Interests/ things they care about

Socio-cultural/ historical context

Religious and political beliefs

Prior scientific (mis)information

Language

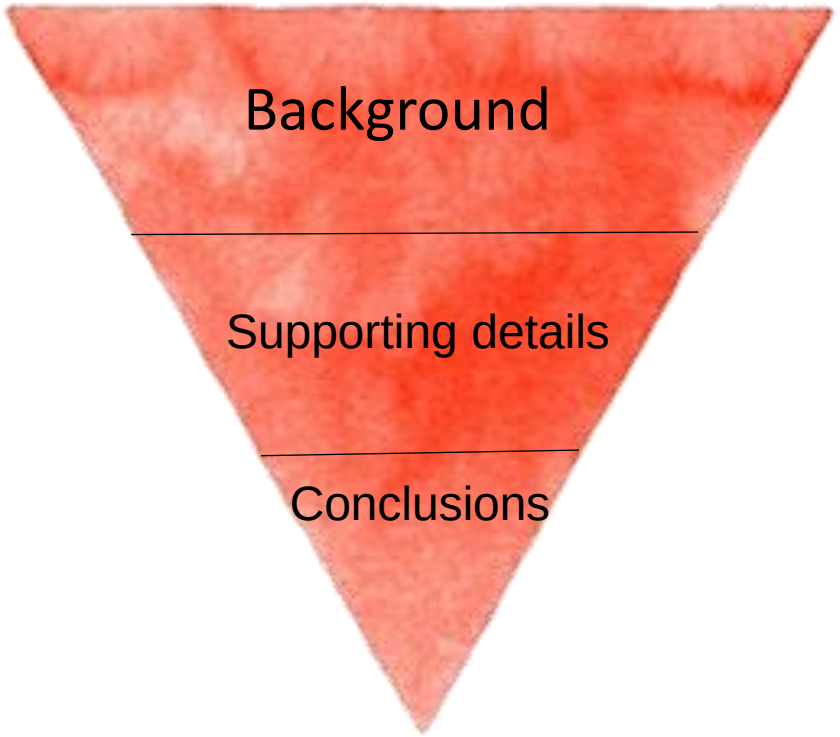
"People aren't some empty jars that you can fill up with scientific information with whatever means we like."

Angela Potochnik

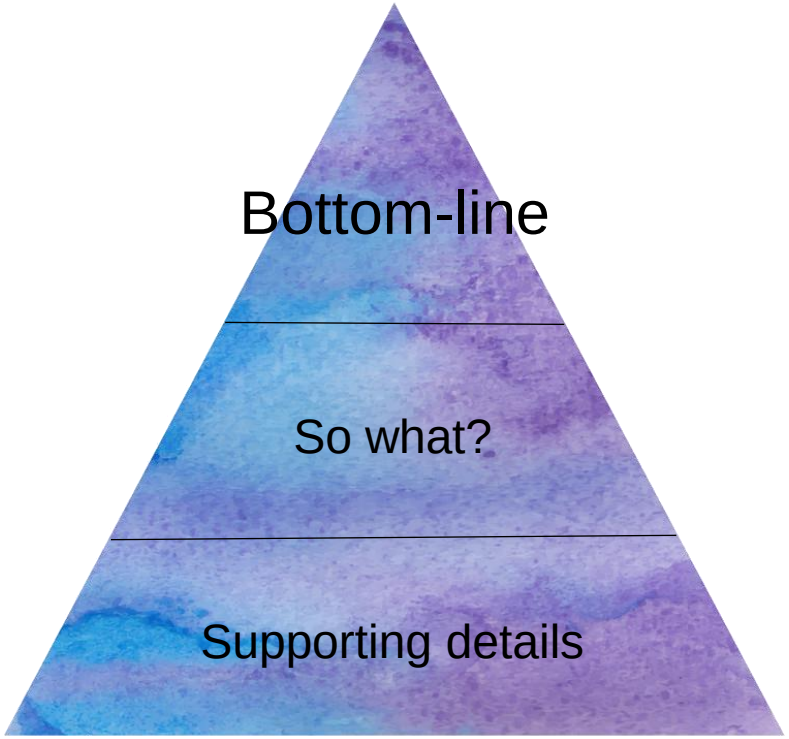
Professor of Philosophy and Director of the Center for Public Engagement with Science at the University of Cincinnati

Communication style:
Scientist *versus* Public

Scientist



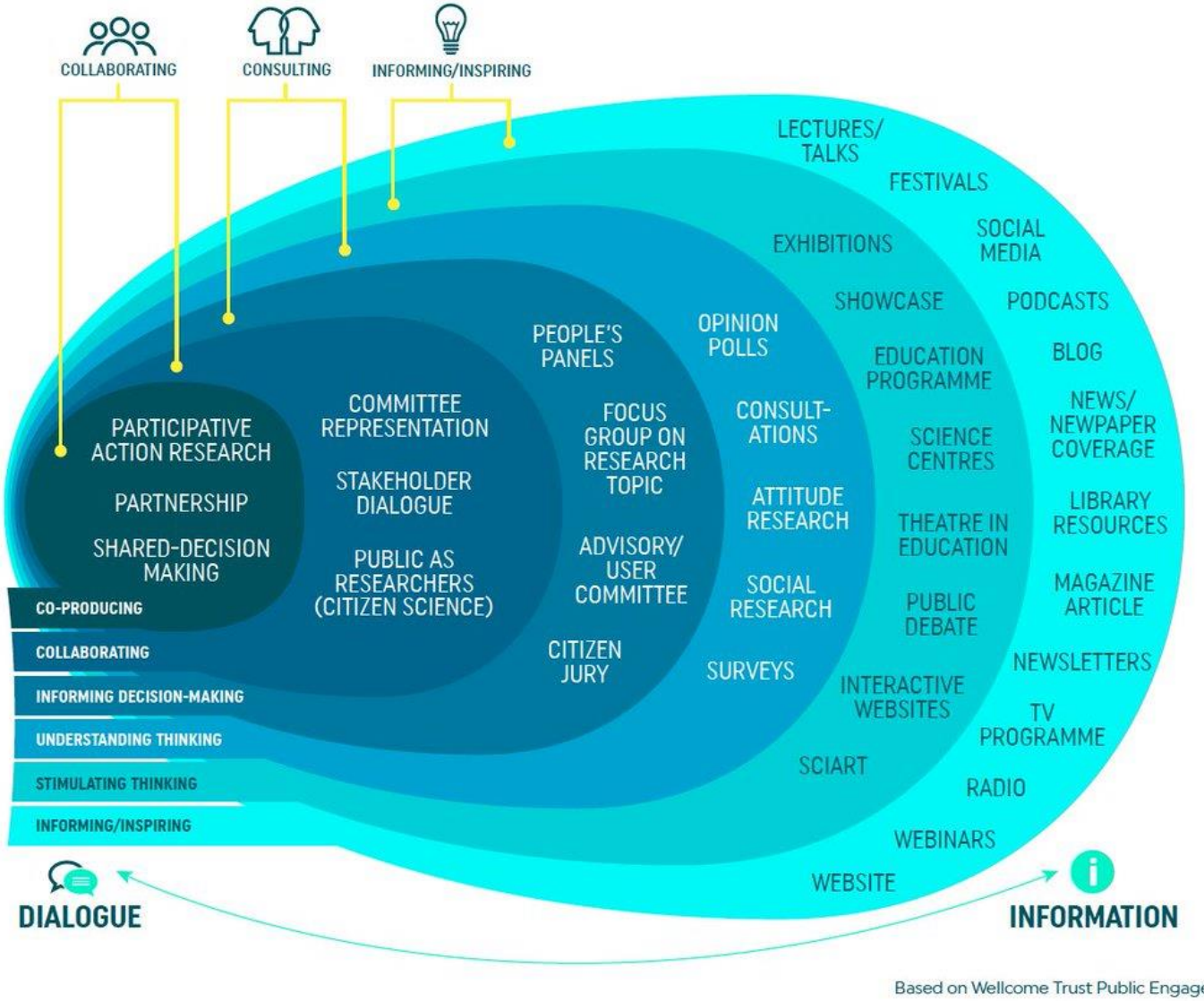
Public



Don’t dumb down the science, just use appropriate language and style

Science Communication and Public Engagement

HOW?



Based on Wellcome Trust Public Engagement 'Onion'

Navigating the complexity of communicating science

- **Know your audience**. Respect their prior knowledge (be mindful of ‘talking down’)
- **Address the question “so what?”** early on to keep your audience interested
- **Avoid jargon** - use simple language but don’t oversimplify; overcome the ‘curse of knowledge’
- **Beware of double meanings** - for e.g. theory (guess – public), significant
- **Use stories, analogies and visuals**

For e.g DNA is like a spiral staircase, blood vessels are like highways, gene regulation works like a brake and an accelerator in a car etc.

- **Focus on making the message/story relevant** and **meaningful** to your audience; **prioritise information**

Some more points to bear in mind

- Science communication researchers have shown that **simple language is not enough for understanding**
- **“Facts”** are interpreted in different ways by different people
- For someone to **apply scientific information**, it must fit with **how they see the world and their values**. Knowledge itself may do little to help people like science or apply it in their lives.
- Science communication is really about **starting a dialogue** and **engaging people**, so stories and art play a critical role.
- Science communication should **improve your research.**

Hallmarks of excellent communication and engagement include:

- A clear sense of purpose
- A clearly defined ‘public’
- A choice of method appropriate to the purpose and public being engaged with
- Use of evaluation to help refine the design and delivery of the activity, and to review its impact and implications for future practice

National Coordinating Centre for Public Engagement, UK

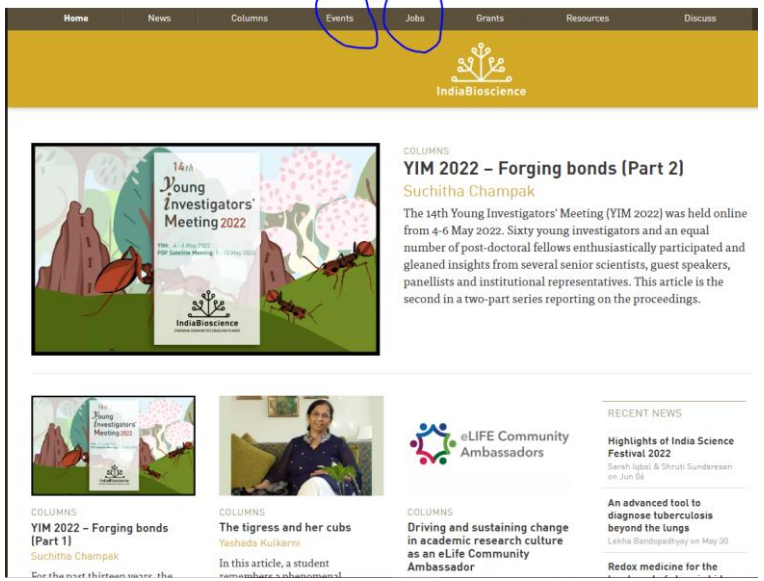
Communication and Engagement Opportunities

Participate:

Science Fiction Writing,
Science Photography
Talk Your Thesis
Deadline 31 October 2022

Deadline 9 October 2022

Jobs and articles



Attend webinars/events/workshops organized by:

PCST — Public Communication of **Science** and Technology (**PCST** Network)

CACTUS

mesh — community engagement network

THE GLOBAL HEALTH NETWORK — Enabling research by sharing knowledge

SCIENCE GALLERY

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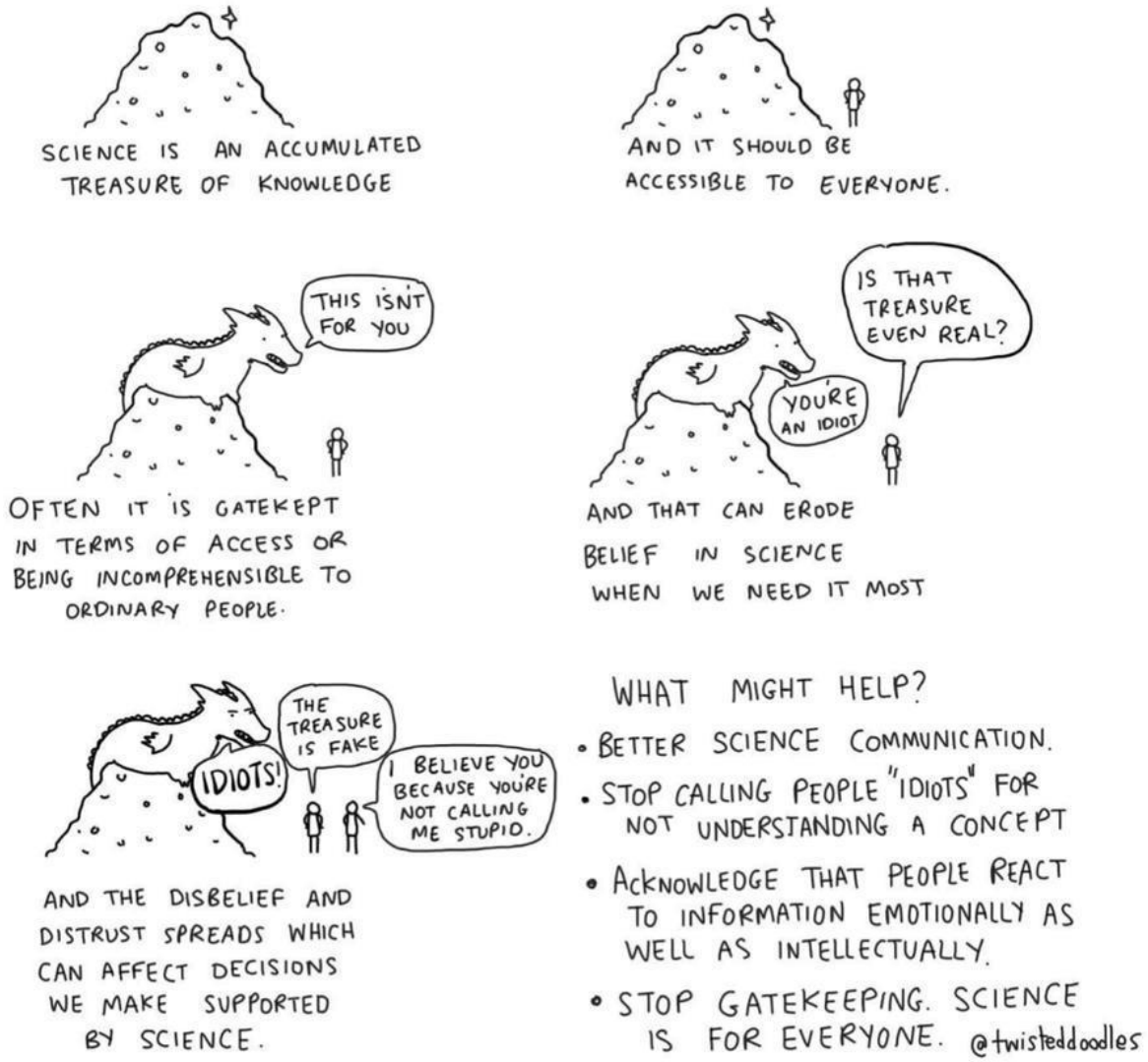
The SciCommer
The global science communication newsletter.

Public engagement resources

- **Public Engagement: A Practical Guide**, Sense about Science
- **Engage2020 Action** Catalogue
- **Mesh: Community Engagement Network**
- **Journal of Science Communication**
- **National Centre for Coordination of Public Engagement (NCCPE), UK;**
- **Falling Walls Engage**
- **Journal of Science Communication (JCOM) (open access)**

Books

- **Don’t be such a Scientist- Talking Substance in an Age of Style** by Randy Olson
- **If I understood you would I have this look on my face** by Alan Alda
- **The Geek Manifesto** by Mark Henderson
- **Inferior and Superior: The Return of Race Science** by Angela Saini



*As a science communicator and/or public engagement practitioner, view yourself as a **knowledge producer** and not merely a disseminator.*

Not only as speakers but also listeners.

As a researcher, don't make public engagement with science an afterthought. Make it a priority.

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