

Engaging in socially responsible research: exploring scientists' perceived value of online public communication of science

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Introduction

Science communication can range from scholarly “in-reach” communication between peers to broader “outreach” communication that involve non-experts ([Hamel 2006](#)).

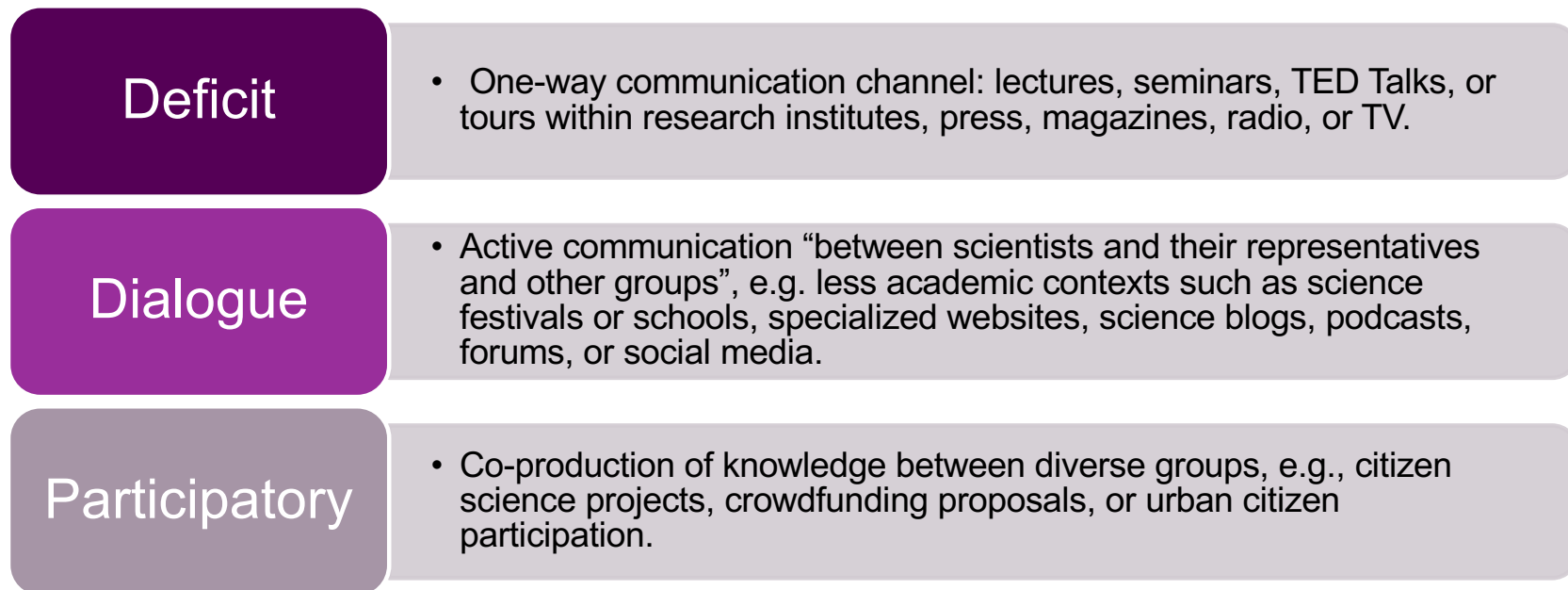
Democratisation of science because it “enable[s] practical applications, and become entrenched societal knowledge, but also because frequently the outcomes of scientific research have far-reaching societal implications and are highly controversial” ([Puschmann 2014: 91](#)). Following the Open Science principles of accessibility, transparency, and reusability, scientific knowledge has become transferrable, accessible, and research topics are more socially relevant ([Ball 2016](#)).

- **“Public understanding of science”**: awareness and understanding of scientific knowledge and procedures.
- **“Public engagement of science”**: citizens’ involvement and interaction with scientists ([Burns et al. 2003](#)).

Influence of **technological advancements and the internet**: direct communication between scientists and non-expert audiences alongside the emergence of digital communicative practices ([Peters et al. 2014](#)).

Theoretical framework: Understanding science communication

Science communication framework developed by Trench (2008: 11):



Theoretical framework: Engagement in science communication

Motivations



Theoretical framework: Engagement in science communication

Obstacles

Time

Resources

Professional
recognition

Institutional
reward

Effectiveness

Adapting the
message



A change from **traditional science communication** to **transformative** digital science communication practices that ultimately address diversified audiences.

How do female scientists perceive, and value digital science communication targeted at non-expert audiences?



Methodology: Participants

Female scientists who are members of the Spanish Association of Female Engineers and Scientists (AMIT)

- 1) Female scientists who frequently communicate science
- 2) Scientists with at least 10 years of experience in academia
- 3) Scientists belonging to STEM and non-STEM fields
- 4) Multilingual scientists (including local and/or international languages)
- 5) Scientists with presence on social media, websites, or blogs

AMiT

Methodology: Collecting procedure

5 question-based semi-structured interview

- Understanding of science communication, experience with science communication activities, perceived values and obstacles attached to such practices, examples of digital activities, and any training needs related to science communication.
- 3-4 sub-questions to follow up and explain their ideas in more detail.

20 interviews (682 minutes)

Collected in February 2024, via Zoom.

3 collecting cycles → saturation point ([Hennik et al. 2017](#))



Methodology: Analytical procedure

Thematic analysis on Atlas.ti

3 coding cycles

- explicit and implicit meanings
- intercoder agreement rate (ICA) analysis (Krippendorff's $c-\alpha$ -binary coefficient)



Results:

Theme 1. Views of Sci communication

Action, made by scientists, to share scientific knowledge or advancements with non-expert audiences.

- Non-specialist audience & plain, direct language.

Responsibility: scientist's job, form to pay back society.

- A transformative value that affects society (improves citizens' lives, solves social problems, increases scientific literacy).

"To me, it means bringing science closer to the general public through different means or tools, so that the research we carry out is more transformative. Otherwise, knowledge stays at the university. And the role of science is to improve people's lives."

(Interview 14)

Results:

Theme 2. Values attached to Sci communication

Highly positive for all parties.

- enjoy talking about science
- fulfilling at a personal level (e.g. the appreciation received, it helps them to better understand their own professional practice, they create relationships with other people)
- Social responsibility (improve the people's quality of life and reduce literacy deficits)
- Reduce gender gaps and promote STEMM as a career

"I think the main reason is motivation... I enjoy a lot doing it particularly with patients because it gives sense to it... I don't know, you connect you work with the target of it, you have a reason, you meet them, so it makes sense why i work on breast cancer research... Is for them"

(Interview 20)

Results:

Theme 2. Values attached to Sci communication

- Not valued enough by their institution
- No positive effects in their trajectory
- Negative stereotypes
- Lack of time and resources
- Maternity

Yet, this situation is changing mostly because of Open Science policies.



"You need to be very careful once you create a communication profile. Otherwise, people see you only as a Communicator and not as a "profesional scientist". This is why I do les dissemination, basically, because it can become a profesional problema"

(Interview 10)

Results:

Theme 3. Digital communication practices value

- Social media as a tool to share rather than to create content.
- Para-scientific genres (specialised websites, blogs, digital newspapers, newsletters), participation in podcasts, uploading materials to open repositories or websites.

Result of the Covid-19 pandemic.

Positive value (wider reach, last in time, accessible).



short educative videos
adapting already existing videos
longer videos like interviews or documentaries
streaming on social media/YouTube

Results:

Theme 4. Sci communication training

- Self-taught
- Fully capable of doing SciCom
- Positive feedback
- Adaptation to language and content
- Images and videos as support

Communication competence
Multimodal competence
Digital competence
Critical thinking



Conclusion

- ✓ Public understanding of Science rather than engagement
- ✓ Social responsibility
- ✓ Valuable activity at a personal level
- ✓ Identified areas for future training

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