Scoping the Professionalisation of Public Engagement with STEM

Update for the Forum

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Introduction

This study has its origins in the Forum networking meeting in March 2016 and parallel, informal discussions with Simon Chaplin, Wellcome. At the networking meeting three action areas were identified, one of which focused on training, professional development, and skills development[1]. In response, we submitted a proposal to the Forum to explore the value of professionalisation for the public engagement with STEM sector.

During 2017, we have undertaken an exploration of the concept of professionalisation for the Public Engagement with STEM/Science Communication sector[2]. We have taken an approach which could be described as 'thinking aloud'. Based on the idea that understandings and knowledge emerge through dialogue, we have undertaken several conversations with those currently working or volunteering within the science communication sector. Broad prompts were used to stimulate the conversation to limit skewing the discussions and in recognition that this topic has the potential to be a sensitive issue.

A combination of online forums, responsive conversations and invited conversations have been used to inform this work. Prompts and discussion through BIG-Chat and PSCI-Com email lists were used to solicit initial responses. People were encouraged to respond off-list if they did not want to respond publicly. We also invited individuals to join the conversation because of their particular roles in the sector. We tested emerging ideas with our Advisory Group[3]. A report[4] was submitted to the Forum in April 2017 for consideration and discussion at the May meeting. The ideas generated from the Forum

[1] https://www.publicengagement.ac.uk/work-with-us/current-projects/national-forum-public-engagement-stem

[2] We are using these terms interchangeably. We acknowledge there are differences in definitions of these terms, but we are mindful that there is inconsistency in how the terms are interpreted and operationalised so have not made a distinction in this work and will use the term science communication for the rest of this paper.

[3] The advisory group met 3 times. Members were: Paul Manners (NCCPE and secretariat to the Forum); Gus Grand (Eden Project) ; Savita Custead (Bristol Natural History Consortium); Dan Bird (Wellcome Trust Public Engagement Fellow); Shane McCracken (Gallomanor); Bob Foster (Chair, British Science Association – Bristol and Bath); Andy Lloyd (Centre for Life)

[4] This is available here http://scoppes.blogspot.co.uk/2017/07/the-science-communication-sector-what.html

have subsequently informed our thinking in producing this final paper of discussion points and recommendations.

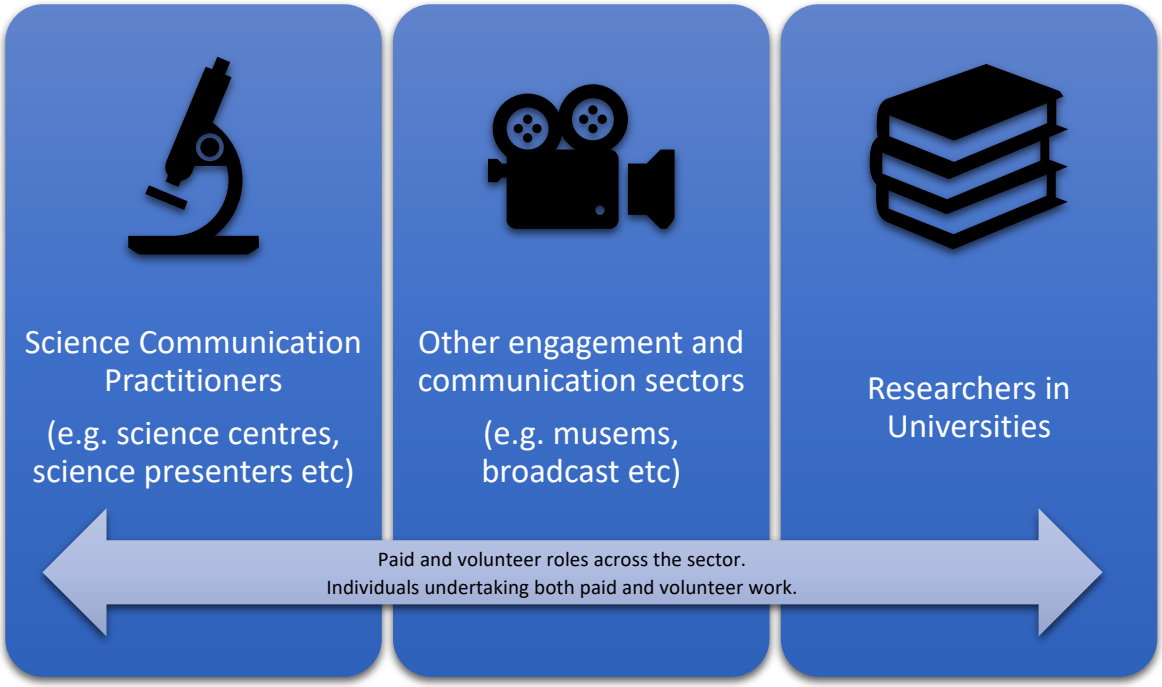
Our findings

The sector continues to be poorly understood

The sector (if it is one) is complex. It involves a number of clusters of people working to engage the public with science: Researchers in universities; science communication practitioners, working in publicly funded and commercial roles; practitioners from other sectors (e.g., the arts, museums, broadcasting and community development).

Operating across all these clusters are a suite of uncertainties:

- Motivations – there is a diverse range of motivations influencing science communication and public engagement practice. This diversity operates at individual, institutional and project level;
- The number and types of people within the sector – we do not know how many people consider themselves to be part of the sector, nor their diversity;
- Economics of the sector – it is not clear how finances flow through the sector.



These clusters have different professional development needs, which are being met in different ways, for example:

- Science communication practitioners have no systematic formal professional development. There are training courses available ranging from one-off skills development through to master's courses. These are delivered by a range of organisations including independents, universities and sector bodies such as the British Science Association. With the exception of courses run by universities, there are no accredited qualifications or courses available. A useful synthesis of the content of such courses was published in 2017 and is included as an annex.

- Other sectors have their own professional development qualifications, routes, and bodies. Individuals can adopt science as a specialism within their chosen area of engagement/communication.
- Researchers access professional development through their universities, learned societies and funders. Progression through professional development is formally recognised through, for example, HEA Fellowship.

Prompts for discussion

- How useful is this representation of the landscape?
- What work could and should be done to better characterise the different clusters and languages/motivations that make up this hybrid sector (science communication, informal science learning, public engagement, etc.)?
- We currently lack evidence and data and a clear picture of the 'talent' base, including diversity; retention; economics. To what extent do you agree with this characterisation? What information that you currently lack would help you to make better informed decisions in this area?

Quality frameworks

During the course of this work it has become clear there is a pressing need for some agreed quality frameworks that document quality for both practice and the people working in the field. There are no agreed standards for what makes for quality practice and we heard repeatedly that the diversity of practice meant it was not possible to create such a framework. We tested this assertion at the BIG[5] Event in July. We used a pinpointing[6] exercise to answer the question "What is good quality science communication/public engagement?"

Quality practice

The results of the pinpointing exercise demonstrated some common themes which could form the basis of a quality framework for science communication (See box overleaf). It is clearly at a very early stage, but we take heart that a diverse group of people could quickly agree on these headlines and suggest there is merit in exploring this idea further.

[5] https://www.big.uk.com

[6] A facilitation tool which is used to answer questions with complex answers.

Draft quality framework for PE STEM / Science communication

1. Accurate portrayal of science
   - 1.1. Have science within our work.
   - 1.2. Being truthful about how science works and its role in society.
   - 1.3. Representing science in a way that is appropriate for the audiences.
2. Being aware of how the work fits into the wider sector
   - 2.1. Knowing how the work contributes to the wider ecosystem of science communication.
3. Recognise the diversity of possible outcomes
   - 3.1. The importance of emotionally engaging with audiences and that changes in emotion and affective learning are valuable outcomes.
   - 3.2. Understanding the purpose of science is a valuable outcome.
   - 3.3. Skills are valuable outcomes.
4. Build on previous experience
   - 4.1. Look at, and learn from, what others have done – including from an academic / theoretical perspective.
   - 4.2. Look at, and learn from, what others are doing.
   - 4.3. Learn from what you have done in the past.
   - 4.4. Ask others for advice.
5. Audiences
   - 5.1. Know who you are trying to reach.
   - 5.2. Meet the needs of those you are reaching. eg by placing the science in a context that is relevant for them and that builds on their previous/current understanding, using the appropriate formats)
   - 5.3. Modulate your practice in response to audience responses.
   - 5.4. It's OK to exclude groups as you target others.
6. Purpose and progression
   - 6.1. Decide what it is you want to achieve (linked to outcomes section) and be clear about it.
   - 6.2. Be clear that your purposes are defined for you, your stakeholders and citizens.
   - 6.3. Make sure you manage expectations.
   - 6.4. Being clear on where your work is on a range of degrees of involvement (link to the Ladder of Participation).
   - 6.5. Provide tools for next steps / progression for you and your participants.

Alongside these principles, some participants highlighted values that are common to the sector:

- Empower people to be involved with science at any appropriate level;
- Be accessible;
- Recognise diversity;
- Be a companion;
- Have a commitment to excellence;
- Don't put people off.

It was also suggested that the Generic Learning Outcomes (developed in the early 2000s for the Museums, Libraries and Archive sector, could provide a useful framework for specifying outcomes.

Quality people

In the United States, the NSF has invested ~£700k to research and develop the Informal STEM Learning Professional Framework[7]. This tool has been designed to be used by professionals at any stage in their careers. It lays out the skills, knowledge, and characteristics needed to guide their professional growth. It was developed through empirical analyses of actual practices reported by science centre and museum staff across the United States.

Prompts for discussion

- There is an emerging appetite for describing quality science communication and setting out frameworks for professional development. Might the NSF skills framework provide a model that could be adapted in the UK?

Professionalisation is happening in practice, if not in name

While now may not be the time for a formal process of professionalisation, it is clear that aspects of professionalisation are emerging. Training courses run, sector bodies exist, and quality standards are beginning to be described. Indeed, RCUK have recently funded three projects to explore CPD for researchers undertaking public engagement with research[8].

While it is positive to see the sector taking its professional development seriously, there is a risk that this work continues to develop randomly with little coherence and the likelihood of contradictions hindering practice, if no organisation takes responsibility for it. This raises the question of who could and should be holding this agenda for the sector? As we have said, this is not about developing and implementing a sector-wide professionalisation programme; it is more about maintaining oversight of

[7] http://www.islframework.org
[8] http://www.rcuk.ac.uk/pe/strategic-support-to-expedite-embedding-per/

emerging practice, putting people and organisations together, and proactively supporting activity that supports emerging needs.

Summary – three things to discuss when we meet

- What can we do to build on the collective experience of PE STEM (rather than ‘re-inventing the wheel) as we develop our professional skills?

- How do we achieve and recognise consistent standards in PE STEM across a diverse field?

- How do we build a coalition of the willing to take forward the issues raised by capacity-building in the sector ?

Annex

Framework based on analysis of science communication training courses[9]

Strand	Learning goal: "Someone who has learned science communication … "	Exemplar learning objectives
Affective	Experiences excitement, interest, and motivation about science communication activities and develops attitudes supportive of effective science communication	• Thinks communicating about science is important • Values public engagement with science • Motivated to take part in public engagement with science activities
Content knowledge	Comes to generate, understand, remember, and use concepts, explanations, arguments, models, and facts related to science communication	• Recognizes that science communication can have multiple goals -- which are sometimes in conflict • Recognizes key issues related to audiences
Methods	Uses science communication methods, including written, oral, and visual communication skills and tools, for fostering fruitful dialogues with diverse audiences	• Knows how to connect with audiences • Crafts messages suitable for specific audiences
Reflection	Can reflect on science and science communication's role within society; on processes, concepts, and institutions of science communication; and on their own process of learning about and doing science communication	• Knows something of the history, philosophy, and social context of science • Applies that historical, philosophical, and social context knowledge to the specific science that is being communicated • Can critique the process and outcomes of science communication
Participation	Participates in scientific communication activities in authentic settings, creating written, oral and visual science messages suitable for various non-technical audiences and engaging in fruitful dialogues with those audiences	• Increases involvement in science communication events • Practices one's skills in authentic science communication in a variety of environments • Becomes a member of a network of science communicators
Identity	Thinks about her- or himself as a science communicator and develops an identity as someone who is able to contribute to science communication	• Feels confident and able to engage • Identifies one's self as a science communicator • Includes "science communication" as a fundamental component of what it means to be a scientist • Is perceived by others to be a science communicator

[9] Ayelet Baram-Tsabari & Bruce V. Lewenstein (2017) Science communication training: what are we trying to teach?, International Journal of Science Education, Part B, 7:3,285-300, DOI: 10.1080/21548455.2017.1303756 http://dx.doi.org/10.1080