NERC Researcher Engage Academy

Insights Research Report: Summary

The National Coordinating Centre for Public Engagement (NCCPE) has been commissioned to develop and deliver the Natural Environment Research Council (NERC) Researcher Engage Academy, a new online, experiential learning academy for NERC researchers seeking to develop their public engagement work.

It was vital that this development opportunity was informed by, and tailored to, the needs, priorities, and experiences of the NERC community. We conducted desk research and interviews with potential participants to better understand how the content, delivery and design of the programme could best fulfil their needs and interests.

The findings led to some key recommendations for the direction and delivery of the programme:
- Showcase participants' expertise and experience, ensuring opportunities for peer-to-peer learning
- Use learning groups to build relationships
- Use mentor support
- Link to other useful resources and opportunities to support learning and networking
- Provide opportunities to put learning into practice and reflect on these opportunities
- Create outputs from the training to benefit the participants and the wider sector
- Use a range of formats - asynchronous and synchronous, working alone, in groups and as a cohort

The research was shared with NERC and an advisory panel of engagement, academic and wider sector experts who worked with us to develop the final programme. Three cohorts were initially identified for this research which are reflected in the language of this report.

Following the feedback of our advisory panel, we adapted the final scope of these cohorts to cover the following:
- **Working in partnership**: For researchers (post PhD) and NERC project staff who already collaborating with others as part of their work or who want to explore this in future. This cohort will get to grips with mutually-beneficial partnership working for effective public engagement.
- **Peer review:** For current or previous NERC Peer Review College members and researchers who have sat on NERC research grant, fellowship or public engagement panels, and for those who are interested in taking part in NERC peer review roles and processes in the next three years. This cohort will explore what it means to assess engagement within grant proposals using practical examples and mentor support.
- **Engagement and impact leadership**: For researchers and NERC project staff working at a mid-late career level. This cohort will be dedicated to developing leadership and strategy development skills with action learning and mentor support.

Applications for the 2022 [NERC Researcher Engage Academy](#) are now open, with the first cohort starting in March 2022

NERC Researcher Engage Academy

Insights Research Report

September 2021
Conducted by David Owen (NCCPE Associate/Gurukula)

Background

The NCCPE has been commissioned to develop and deliver the Natural Environment Research Centre **(NERC) Researcher Engage Academy**: a 2-year public engagement capacity building programme of professional development with experiential learning for up to 200 NERC-funded researchers that builds on the work of the NERC Impact Development programme.

It is anticipated that participants will take part in both core and cohort-specific modules. Three cohorts were identified at the start of this research. These were:

- **NERC Peer Review College members:** Researchers who are already NERC Peer Review College members and regularly involved in NERC peer review.
- **Engagement and impact leadership in mid – late career researchers**: Senior researchers (not necessarily with engagement experience) who will then act as advocates for engagement within their own context.
- **Partnership Working:** Researchers with interest in developing partnerships beyond the research environment.

Participants will explore relevant content with expert facilitators, mentors, and within learning peer groups. An online space will enable networking, communication, shared learning and peer support, and curated public engagement opportunities will encourage the implementation of their new skillset.

To inform the development of this programme, we undertook desk research and interviews with potential participants in the programme to better understand how it could best fulfil their needs and interests. We looked at both the content of the programme, methods of delivery and overall programme design.

Methods

The research consisted of several key elements:

1. **Desk research:** Examining existing literature to better understand the key features of current professional development programmes that are working well, especially those targeted at the NERC research community.

2. **Survey:** An online survey (mix of quantitative and qualitative questions) was distributed through the NERC research community. The survey received 91 complete responses (see annex A for a detailed breakdown).
3. **Interviews:** We undertook 11 semi-structured interviews (see annex B for the interview schedule) with NERC researchers who fit within the cohort criteria (see annex A for a detailed breakdown).

This report provides a synthesis of the key learning from the research and recommendations for the direction and delivery of the programme.

Key Findings

Training and Development Needs

1. NERC's research remit is increasingly multi and interdisciplinary — designed, supported and delivered in partnership with other research funders and research users. A small number of researchers commented that they learned new skills from academics from other disciplines whilst working in multi-disciplinary teams. The new skills included facilitation techniques and approaches to project management, as well as understanding other approaches to public engagement with research.

   > *"Because I do transdisciplinary research, I learn from the much, much wider community all the time..."*

   > *"As researchers we're becoming more holistic in our thinking. But to be holistic, you need CPD across a whole range of topics..."*

2. Dissemination focused interactions with the public tend to be at the forefront of researchers' minds when asked about what public engagement looks like within the context of their research. However, when probed, other approaches surfaced, such as working with policymakers, partnership work with communities and citizen science.

3. In line with the above, survey respondents identify the main benefits to engaging public audiences as informing/raising awareness. The top five responses correlate with previous studies of NERC researchers[1]:
   - To inform the public/raise awareness about my work (n=88)
   - To ensure my work is relevant to society (n=72)
   - To contribute to public debate (n=68)
   - To be accountable for the use of public funds (n=67)
   - To learn from public groups (n=64)

4. Previous studies of NERC researchers have noted an overall shift in the understanding of public engagement towards more integrated public involvement and co-creation. Our findings correlate with these studies. Interviewees often cited a definition of public engagement with research that encompasses two-way engagement with non-research partners. Several participants in this study cited the NERC Impact training as being fundamental in broadening their appreciation of all the different forms of and possibilities of public engagement with research.

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[1] **https://www.publicengagement.ac.uk/sites/default/files/publication/public_engagement_with_nerc_environmental_science_-_challenges_opportunities.pdf**

"So, communicating my research to the public, has kind of come in quite a few ways. I've worked a bit with the media including TV and radio. And then there's the work that I have done with museums".

"…definitely different audiences, I work with farmers as well, trying to talk to farmers, exploring which are the best practices to make sure that their crops are okay. And, as I'm saying, I'm the scientist, but I don't know, nothing. I know nothing compared to these farmers that have grown these crops for years and years. So I'm also absorbing a lot of information from them. And so, this is where collaboration comes from…"

"There are two types of public engagement that I do. There is what I would call working with the general public. Which could be in schools for example, and then there is what I call knowledge exchange. I've never quite worked out where public engagement stops, and knowledge exchange starts…"

"I think, possibly my key breakthrough was realising that public engagement works best when it works both ways…If you communicate what you're doing, you're also learning from others from what they're doing in their experience".

5. Researchers tend to have a public engagement specialism or focus. For example, working with schools, working with the media, or participatory action research. Some researchers indicated that they wanted to undertake a gap analysis of their skills with somebody who understands the field; others wanted to expand into other forms of engagement practice (i.e., moving from partnerships with schools to policy engagement); others would like to explore how they can make their current activity more sustainable (i.e., managing time and workload and assessing what projects are worth investing in to meet their objectives). Drawing those connections out, surfacing common ground and building on people's experiences in any given area will all be important aspects of this programme. Consideration must be given to effectively deepening and expanding participants' knowledge of any given area in line with their needs.

   "I don't understand where the gaps are that could make me do a really good job. A little knowledge can actually be dangerous, especially now I am now mentoring research students".

6. Participants in the study are looking to develop skills in all areas of public engagement with research. The most cited in the survey may provide a framework for the core modules:
   - Impactful engagement (n=73)
   - Partnership accelerator: Working with policymakers (n=61), Working with schools (n=53) and working in partnership with community organisations (n=52), working with the cultural sector (n=38).
   - Understanding audiences (n=59)
   - Developing an engagement strategy (n=57)

7. The survey results point to some optional skill-based modules: Running events (n=34), Communicating (n=41), Online engagement (n=46), Exhibition design (n=27), Facilitation (n=24), Evaluation (n=45), Project planning (n=34).

8. A previous study of NERC researchers conducted by the NCCPE found that there was a demand for: (i) evaluation training, (ii) support for mid-career / senior researchers, (iii) working with communities (particularly navigating cultural, societal, and religious sensitivities, both nationally and internationally). These themes emerged from our research.

9. We explored specific training needs in greater detail via interviews. During the interviews, we asked questions targeted at the three potential cohorts of (i) NERC Peer Review college members, (ii) Engagement and impact leadership in mid – late career researchers and (iii) Partnership working. We provide a short summary of the findings from the interviews below:

   a. **NERC Peer Review College members**
   Members of the Peer Review College reported that there was no recognised framework for assessing public engagement within research grants. Their approach tended to be intuitive, for example, reading between the lines on proposals to assess whether the research team have genuine partnerships in place with a collaborative track record or if needs assessments had been completed. One interviewee commented that: 'there are norms for evaluating the science, the same is not true of public engagement'.

   Whilst interviewees recognised these challenges, it was rarer for them to identify any specific training and development needs in this area even when probed. One interviewee did note that they did not feel adequately trained. Another noted that they felt out of their depth reviewing proposals where the methods of engagement were ones they had limited experience of.

   > *"I don't feel authorised to do this; it is taxpayers' money, and we should be treating it with respect".*

   Our assessment, based on these conversations, is that there would be value in some peer-to-peer support and potentially some action learning sets in relation to assessing public engagement in grants. This may lead to the development of some norms and/or minimum standards for what 'poor', 'average', 'good' and 'excellence' looks like in proposals and in understanding the expectations of the funders (i.e., whether a poor public engagement approach would render an otherwise excellence research proposal un-fundable). Alumni from this cohort may benefit from increased confidence in articulating the case for or against a proposal on the merit of the public engagement. Members from the Peer Review College may also benefit from seeing examples of really innovative, high-quality public engagement.

   > *"I'm reasonably confident in reviewing bids. It's helpful to see if someone has done something innovative and clever, so I can emulate it. There is always this envy when a university is working in partnership with these institutions that are experts in engagement and using that expertise to improve the work".*

   b. **Engagement and impact leadership in mid – late career researchers**
   Several training needs were identified by researchers in their mid – late careers. These include:
   - Understanding different approaches to public engagement, in particular moving beyond the approach they are familiar with and how you mentor and learn from others who are working with different methods.
   - Leading and learning with others.

- Developing and sustaining projects, in particular scaling up a project, being strategic about what you say 'yes' to, supporting others to do this, and securing funding for existing projects.
- Understanding how they might utilise resources available within the institution and via external networks. How they might structure engagement teams on larger grants.
- Managing and leading others above their pay grade.
- Inspiring others to undertake public engagement with research.
- Developing and delivering training in public engagement.
- Leading public engagement with research on larger grants. Building multi-disciplinary teams to deliver public engagement objectives.
- Helping other academics produce resources.

The interviews showed how people at a mid - late career stage were being more strategic about their engagement activity, thinking about partnerships, impact, and the allocation of resources in more thoughtful ways.

"I think I can actually start planning more… Developing from the beginning who I want to target and what the outcomes are, being a bit more active and planning it myself. We'll be working with schools and zoos and integrating with their existing programmes… it's all a bit more strategic and thoughtful".

In considering PE training for mid - late career researchers, it appeared important to factor in challenges that were quite common for people in these roles and may not be specific to public engagement:

"I often think the biggest challenges that the Head of School faces is managing difficult individuals. And so, there are a lot of training needs that focus on conflict resolution".

"So, if we talk about grants, you're supposed to build in CPD for your team as part of the grant. And so, you have to think about how best to do that".

"I think in terms of the opportunities for continuing professional development, once you get to senior management levels, the opportunity for continuing professional development just gets squeezed and squeezed in terms of your available time to do it. And you end up just responding to those training courses that are essential, and that are a formal requirement".

c. **Partnership Working**
Approximately two-thirds (n=64) of participants in the survey are involved in partnerships beyond their research environment. One-third of respondents (n=34) are not involved in partnerships beyond their research environment. The vast majority (n=84) are interested in developing partnerships in the future.

Training needs related to partnership work that were identified in the interviews include:
- Advocating for high-quality engagement and the time it takes to undertake effective partnership work.
- Thinking about impact from multiple perspectives.
- Linking with schools, cultural institutions, community groups.
- Understanding different audience's needs and methods, and approaches for doing so.

- Building and identifying different networks that you can work with.
- Reflecting on different roles individual researchers can play within partnerships and how this relates to their learning/teamwork style.
- Unpacking the ethical dimensions of partnership, particularly around working in developing countries.
- Understanding the different expectations of partners (i.e., how industry manage IP, professional codes of conduct, dress, etc.).
- The art of listening and facilitation skills.
- Co-creation of environmental data, community organising, approaches to mobilising research.

10. We also asked interviewees a more open question about their public engagement training and development needs: *In public engagement with research, what would you like to find out more about? Where would you like to develop your skills?* We've summarised the responses below:
- Embedding evaluation in public engagement with research.
- Working to high-quality production values.
- Writing skills and storytelling.
- Empowering users to do their own research.
- Narrative mapping (i.e., understanding how different audiences are talking about issues related to your research).
- Taking advantage of COP26.
- Interpreting feedback (i.e., every story people tell is subjective).

11. The capabilities that people would like to develop via public engagement training align well with the findings from the **Engaging Environments: Lessons from the NERC funded Engaging Environments Programme**. These include:
- Developing the skills needed to build productive multi-disciplinary/multi-partner research teams.
- Utilising and contributing to the evidence base for public engagement.
- Supporting researchers to work with individuals and organisations that bring different skill sets – for example, creative storytellers or community organisations.
- Understand your audience, the values and opinions they bring and what motivates them to get involved.
- Invest in and support researchers and students to develop high-quality approaches to public engagement.
- Develop the skills and capabilities needed to co-design.
- Build-in evaluation and reflective approaches.
- Develop systems that enable you to learn from other people's experience and knowledge.

Effective CPD Interventions

1. The most frequently undertaken public engagement training researchers had taken part in over the past two years include participation in conferences/organised events, supervising, mentoring or teaching others, and reviewing books, articles, or papers:
- Presenting at conferences/organised events (n=54)
- Supervising research or students (n=53)
- Attending conferences (n=53)
- Lecturing or teaching (n=47)

- Reviewing books, articles, or papers (n=45)

2. Participation in distance or online learning was quite common (n=27), potentially not a surprise given the pandemic. However, attending or planning formal courses (such as the NERC Researcher Engage Academy) is less common. The proposed programme will likely be a unique opportunity for many of the participants taking part.

3. Respondents to the survey tend to value professional development and feel that it is more important to them than other researchers in their institution, their research field and their institution as a whole. Previous studies have suggested that CPD and training can be met with significant resistance within academic communities, in particular because of its link to what is seen as an obsession with measuring performance (Stefani, 2013), in line with a growing encroachment on higher education and academic freedom (Bozalek *et al.*, 2014; Mockler, 2013; Kneale *et al*., 2016; Dill, 2005). The researchers we spoke with and the majority of those who had completed the survey appeared to have an appetite for CPD.

4. Overall, researchers we spoke with felt they had a great deal of autonomy over their CPD. They were not actively discouraged from undertaking CPD opportunities nor were they actively encouraged. Nevertheless, competing pressures on time, budget and a lack of suitable opportunities were significant barriers to participation in professional development for many. We found that for some early career researchers it was difficult for them to assess which CPD opportunities to pursue given the short term and changeable nature of their contracts. Our findings also suggest that researchers have no workload allocation or no awareness of workload allocation for professional development.

5. In the survey we explored how much time people had invested in their professional development within and outside of working hours. Several respondents found it hard to quantify; however, around 50% of the people completing the survey provided an estimation for further analysis. Of these responses the average (mean) time spent on CPD within working hours over the past two years was 82 hours. Responses ranged from 420 hours to 0 hours. Outside of working hours the average (mean) was 68 hours with a range 350 hours to 0.

   We are estimating that the NERC Researcher Engage Academy will take around 30 hours of learning time. It is notable that 21 respondents (36%) have spent 30 hours or less on CPD during working time over the last two years, and 20 respondents (40%) outside of working hours. 35% of respondents spent more time on CPD out of working hours than they did in working time. When you tally up the total time spent on CPD both in and out of working hours, on average researchers spend 25 hours more on CPD in work time compared with outside of work.

6. People frequently cited that the most effective CPD interventions they had taken part in were those that met a pressing or immediate need—for instance, undertaking management training when stepping into a leadership role for the first time.

   "The most valuable courses have been those that come at the right time. For example, just when I am going to take a big project".

   "We have that in the grant writing workshop... they encourage you to share exactly what you're doing and people are feeding back on it… So you kind of feel the direct benefit for you".

7. It was quite common for researchers to cite a preference for action research approaches. People wanted to work together with others on tangible outputs, materials, or real problems that they are grappling with. They wanted the training time to be used productively and to help them solve real problems or progress projects that they were overseeing. It was clear that having a live project to develop and reflect on with peers would be highly valuable, though this might not be feasible in practice depending on the size of the cohort and the focus of the training. Perhaps one opportunity would be to run a programme for holders of large grants. We got the sense from interviewees that the project must be authentic and not a fabricated one for the purposes of delivering the training.

8. Several saw CPD as part and parcel of their job. They pointed to the importance of reflection and learning from others:

> *"I think most CPD type activities are picked up on the job. And, and if you're lucky enough to have the opportunity to observe good managers and good heads of school, for example, then you try and emulate them as best you can".*

9. It is important to note that whilst several interviewees cited a preference towards action learning approaches as their most valuable CPD experiences, some interviewees cited smaller programmes where they had gained skills such as speed-reading or presenting which they have used almost every day in their work.

10. The findings from this research corroborate with consultations undertaken as part of the **ChallengeCPD,** where for example, researchers stated that the sign of an effective CPD programme was that it saved them more time than they put in. In a broad sense, the criteria for successful CPD that arose from our discussions with researchers aligned with the findings from this earlier work funded by UKRI:

Design
- Enables you to **reflect** on an intervention, task or professional challenge and what you have learned from it.
- Is **linked to a big picture** (i.e., not a one-off box tick) but linked into career pathways.
- Is **timely** and run when people need it at times that they can attend.
- It is **enduring** and provides resources that people can return to.
- In an **environment** that is supportive of learning.

Delivery
- **Challenges thinking and behaviour.** Opening-up new ideas that might change practice – providing a space to 'dream differently'.
- **Is inclusive** and designed to account for different attitudes towards 'training', different learning needs and styles etc.
- Uses **active learning** approaches, not simply presenting black and white answers.
  Is **responsive** to the needs of participants (i.e., tailored on the fly) and **relevant** to participants' backgrounds and requirements.

Valued
- Provides **recognition and accreditation for skills.**
- Is **efficient** and **effective,** saving more time than the time invested in it.
- Is delivered by someone who has the **confidence** of the researchers.
- Helps **build networks and cohorts of practice**, facilitating peer-to-peer support.

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11. One researcher pointed to a programme that they had attended which had over thirty different facilitators and trainers all from different professional backgrounds. They valued hearing from different perspectives and expertise.

12. Several of the mid - late career researchers we spoke with have a wealth of expertise to contribute as mentors and facilitators on the proposed programme. Whilst they too wanted to learn from others, mobilising this expertise could offer huge benefits to all participants.

Delivering CPD Online

1. Participants in the research were largely familiar with Zoom (n=94) and Teams (n=80). Other online participation platforms were less familiar, for instance: Slack (n=28), Padlet (n=15). The interviews confirmed this. There was a slight preference for Zoom over Teams as it was considered less 'buggy' as a live conference programme. There was reticence in some quarters towards additional online tools and platforms being used (i.e., Padlet, Slack) as people did not want to invest time in learning a new platform and had had previous bad experiences.

2. One interviewee had been experimenting with online platforms that replicate a physical environment and give users more flexibility over how and where they meet. They gave two examples:
   a. **https://www.sococo.com**: An online conference platform that replicates a physical space in the virtual world.
   b. **https://www.gather.town**: Similar to the above, Gather Town attempts to reintroduce a physical space to the online meetings. Enabling people to form their own clusters and unconference spaces.

   You might also like to consider Remo: **https://remo.co** as an alternative to the above suggestions.

3. A number of different formats were put forward for the delivery of the programme. Survey respondents could select all that apply. The most popular formats were:
   a. Webinars – live with Q&A (n=74)
   b. Self-directed modules complete at own pace (n=58)
   c. Instructor-led sessions at set times (n=55)
   d. Webinars – on demand (n=52)
   e. Mentors – access to mentors with expertise in specific areas of engagement practice (n=50)

4. In the interviews, we found that a 2-3-hour session (often preferred in the mornings) would be the longest interactive session that people would attend. Generally, people recommended a mix of synchronous and asynchronous engagement during a session. For example, taking on board some content, working on it individually, then bringing it back to peers/tutors for further work and feedback.

5. Whilst researchers value the networking opportunities afforded by conferences and CPD opportunities, some interviewees cited warnings around too frequently mixing up the breakout groups. Course designers need to balance the need to build trust between participants and a sense of a community with a group of peers with enabling networks to develop. One interviewee cited they had attended a session where they were in different

groups each time. This created a situation where there was not the time to get to know each other and build trust, whilst as they went through the day, the questions became deeper and more probing. They reported that people gave up participating after a while.

6. Researchers appeared to value having points in the programme for 1:1 interaction: for work within an established peer group, for networking or for taking onboard new content. One interviewee spoke favourably of using pre-recorded video with the speaker in the room to engage with the conversations that surround the presentation.

7. It was noted that, despite some challenges around accessibility, the virtual world could open up CPD to researchers who might not have put the time aside to attend face-to-face events. That said, other interviewees found the online format a poor cousin to face-to-face engagement.

> *"I've found the online world to be challenging. It's harder to get social feedback and interaction in group meetings, where only one person speaks at time".*

> *"I feel that because of the virtuality of everything, more people have been able to come together, across different interest and countries. I have received invitations recently which, if it weren't for virtual interaction that I've had, I maybe would not have built the networks to make that possible".*

Recommended Dissemination Channels

1. We asked interviewees if there were any dissemination channels the NCCPE could use to notify NERC researchers of the potential training opportunity. The following avenues were put forward:

Learned Societies & Professional Bodies
- Challenger Society for Marine Science: **https://www.challenger-society.org.uk**
- Royal Meteorological Society: **https://www.rmets.org**
- Royal Geographical Society: **https://www.rgs.org**
- Institute of Mathematics: **https://ima.org.uk**
- VKems: **https://www.vkemsuk.org**
- The Royal Institution: **https://www.rigb.org**
- Bristol Ecological Society: **https://www.britishecologicalsociety.org**
- Chartered Institute of Ecology and Environmental Managers. **https://cieem.net**
- Society for Applied Microbiology: **https://sfam.org.uk**
- Microbiology Society: **https://microbiologysociety.org**
- Royal Society of Biology: **https://www.rsb.org.uk**
- British Society Geomorphology: **https://www.geomorphology.org.uk**

JISCmail Groups and Networks
- Promoters of Maths: **https://www.jiscmail.ac.uk/cgi-bin/webadmin?A0=MATHS-PROM**
- Climate Maths Network: **http://blogs.exeter.ac.uk/climathnet/**
- Maths for Planet Earth: **https://mathsforplanetearth.ouce.ox.ac.uk**

Other recommendations
- NCCPE/NERC Twitter Accounts

- Institution – Researcher Development Offices

Recommendations

Training and development needs

1. Consider taking participants through a gap analysis, encouraging them to identify and prioritise opportunities for further development.
2. Researchers bring a diverse set of experiences to public engagement. The programme should provide an opportunity for researchers to broaden their appreciation of the different forms of public engagement (drawing on contributions from participants) whilst also recognising that participants will want to deepen their skills within a specific area of public engagement.
3. In light of this (point 2 above), the NCCPE should be attentive to the area of practice that the researchers bring and want to further develop, alongside more generic public engagement skills and attributes such as leadership, evaluation, and partnership work. This may involve building groups around a specific area of practice (e.g., schools' outreach, engaging the media, policy, working with communities).
4. The research highlighted the following opportunities to be considered when developing the training:
   - **Learning about effective partnership.** An overview on effective partnership working with modules relating to specific types of partner, e.g., policymakers, schools, community organisations, cultural sector. These modules could bring in experts from these areas.
   - **Peer review college.** Action learning sets, bringing the cohort together to develop a quality framework for assessing bids that involve public engagement. Modules on influencing others, the evidence base for public engagement, and how you make the case for quality engagement.
   - **Mid to late career.** A leadership programme targeted on the public engagement context. Participants form peer groups to reflect on aspects of leading public engagement – in line with:
     - Understanding different approaches to public engagement, in particular moving beyond the approach they are familiar with and how you mentor and learn from others who are working with different methods.
     - Leading and learning with others.
     - Developing and sustaining projects, in particular scaling up a project, being strategic about what you say 'yes' to and supporting others to do this, and securing funding for existing projects.
     - Understanding how they might utilise resources available within the institution and via external networks and how they might structure engagement teams on larger grants.
     - Managing and leading others above their pay grade.
     - Inspiring others to undertake public engagement with research.
     - Developing and delivering training in public engagement.
     - Leading public engagement with research on larger grants. Building multi-disciplinary teams to deliver public engagement objectives.

5. The programme should help accelerate skills development by signposting relevant opportunities and providing opportunities to reflect on experiences with peers. Several short skills-based modules could be provided around themes such as: facilitation skills, evaluation, project planning, etc.

Effective CPD interventions

6. Mentoring could be a valuable professional development opportunity if supported with training and reflection. Where possible, equip trainees to be mentors for other participants in the programme. For example, the mid/ late career cohort could valuably support more junior researchers as part of their professional development. Mentors should bring their experiences of mentoring back into their peer groups to reflect on the challenges.
7. There was appetite for problem-based learning, potentially organising action learning sets around real problems/challenges that participants bring.
8. There was appetite for a mixture of different learning formats. Webinars, expert provocations, peer groups, task and finish, group work, additional reading, etc.
9. Thirty hours is an appropriate amount of time for training but needs to be communicated effectively. Based on current participation in CPD, thirty hours may represent a barrier for some researchers and should be treated flexibly.
10. Funders could consider developing a CPD programme around the delivery of Public and Community Engagement programmes alongside larger funding calls. This would create a cohort that has a shared identity and would provide an excellent focus for professional development and learning.

Delivering CPD online

- In comparison with face-to-face meetings, people still do not yet have the conventions or shared experience of having effective conversations online. However, evidence from interviews suggest that online training would not be a barrier to participation and may be an enabler for some.
- Use tools and technologies that delegates are already familiar with. Zoom was welcomed over Teams for online conferences and workshops. Any additional tools such as Miro or Padlet should be supported with training, although it is advisable to use only one online tool, rather than a selection. Tools should be assessed for issues around inclusion and accessibility.
- There was interest in supporting participants to review and adapt their presentation style for online delivery. This could form one of the skills-based modules.
- Potential participants suggested that three hours was the maximum time they would give to an online event. It may be worth considering shorter sessions, interspersed with group work and some reflection time, for example, breakfast meetings, scheduled group work time, and afternoon catch-ups.
- Lead by example, setting out the conventions to participants at the beginning of the session (i.e., videos on/off, mics, how to participate, how to get from one 'place' to another, keeping to time etc.).
- Build time in for people to get to know one another online in order to build trust and allow groups to go deeper into the work.

Bibliography

Best practice in communications training for public engagement with science, technology, engineering and mathematics'. *Journal of Science Communication*, **8 (2), 1–13. (Silva, J. and Bultitude, K. 2009)**

Continuous Professional Development for Public Engagement (Helen Featherstone and David Owen, 2018)

Developing key skills as a science communicator: Case studies of two scientist-led outreach programmes'. *Geosciences*, **5 (1), 2–14. (Illingworth, S. and Roop, H. 2015)**

Outputs from the Citizen Engagement on the Environment project (National Centre for Social Research, 2020)

Outputs from **Opening Up Science for All** (University of Reading) and subsequent Engaging Environments project: https://linktr.ee/NERC_ENGAGING_ENVIRONMENTS

Public Engagement with NERC Environmental Science: Challenges & Opportunities (Paul Sapple, 2019)

Supporting future scholars of engaged research'. *Research for All*, **1 (1), 168–84. (Holliman, R. and Warren, C. 2017)**

Annex A: Participants in the study

	Survey	Interview
	91 participants 3 Director/ Dean/ Centre Head 13 Lecturer 27 Professor 3 PHD Student 9 Researcher 2 Research assistant 1 Group leader 10 Research fellow 5 Reader 12 Other	11 participants 2 Director 2 Lecturer 3 Professor 1 Research technician 2 Research assistant 1 Senior scientist
	75 HEIs 11 Research Institutions 2 NERC research centre 1 NDPB 1 Professional body 1 consultant	8 HEIs 2 Research Institutions 1 Professional body Of this group, 3 interviewees worked at a Russel Group University or at a research institute affiliated with a Russel Group University.
	How long have you been funded by NERC? Excluding PHD: 19=1-5 years , 10=6-10 years , 19=>10 years , 10=N/A Including PHD 10=1-5 years , 6=6-10 years , 13=>10 years , 2=N/A	How long have you been funded by NERC? Excluding PHD: 3=1-5 years , 1=6-10 years , 2=>10 years , 2=N/A Including PHD 3=1-5 years , 1=6-10 years , 2=>10 years , 2=N/A
	93.5% aligned with the Working in Partnership cohort 62.2% aligned with the NERC Peer review college cohort 31.8% aligned with the Engagement and Impact leadership cohort	100% aligned with the Working in Partnership cohort 54.5% aligned with the NERC Peer review college cohort 27.3% aligned with the Engagement and Impact leadership cohort

Annex B: Interview Schedule

What does CPD mean to you?

In what ways are you supported to undertake CPD currently? Do you feel you have ownership over your own CPD opportunities?

What are the key barriers to you undertaking CPD? And/or applying the lessons learned from CPD?

Looking back over professional development you have taken part in in the past is there a programme that really stood out? What did you like/value about it? What did you take away from it?

What makes an effective CPD intervention? Reflecting on your previous experiences - what makes for high-quality professional development?

In what ways have you been able to apply what you have learnt from CPD to your work?

What does PE look like in the context of your research?

Have there been any key breakthrough moments in your understanding of and practice of public engagement?

In public engagement with research, what would you like to find out more about? Where would you like to develop skills?

<u>Peer review</u>

- You are part of the peer review college. What experience have you had of accessing funding bids?
- How confident do you feel assessing bids around PE? What are the challenges?
- What CPD needs do you have specific to your role as a peer reviewer of funding bids?

<u>Mid - late career</u>

- What roles do you play in leading and supporting others around engagement?
- What skills/experiences do you draw on? What challenges do you experience?
- What PE CPD needs do you have specific to this stage in your career?

<u>Partnerships</u>

- How confident do you feel working in partnership? Are there any specific skills about working in partnerships you want to develop?
- How could CPD support your partnership work?

In your survey responses you said you allocated _____ hours to professional development, can you say a little more about what this consists of? (i.e., formal training, putting time aside for reflection and reading etc.).

What online methods of delivery would suit you? What should we try to avoid?

What channels and platforms are you using regularly?

How can the programme fit best around your current workload and other responsibilities?

Do you have any recommendations about existing channels and networks the NCCPE could use to reach NERC researchers to share this opportunity and resulting resources?

Is there anything else you would like to say? Anything that we have not covered yet in the interview?

Thank you, it's been a pleasure to speak with you. I would just like to remind you that everything you have said will remain confidential, and you will not be identifiable in the final report. You are also free to withdraw from this study at any point.