

**WRITTEN EVIDENCE SUBMITTED TO THE HOUSE OF COMMONS SCIENCE AND TECHNOLOGY COMMITTEE'S INQUIRY INTO HOW GOVERNMENT, SCIENTISTS, THE MEDIA AND OTHERS ENCOURAGE AND FACILITATE PUBLIC AWARENESS OF – AND ENGAGEMENT IN – SCIENCE**

**SUBMITTED BY: THE NATIONAL COORDINATING CENTRE FOR PUBLIC ENGAGEMENT (NCCPE)**

Contact: Paul Manners, Director, NCCPE (paul.manners@uwe.ac.uk)

**Introducing the National Coordinating Centre for Public Engagement (NCCPE)**

The National Coordinating Centre for Public Engagement (NCCPE)<sup>1</sup> was established in 2008. Funded by RCUK, the UK HE funding councils and the Wellcome Trust, the NCCPE supports universities to increase the quality and impact of their public engagement activity, and to develop cultures which better support excellent engagement with the public. The centre has three strategic aims:

- 1. Inspire a shift in culture:** By supporting universities in bringing about strategic change that embeds public engagement and by identifying, developing and disseminating evidence-informed practice
- 2. Increase capacity for public engagement:** By brokering and encouraging the sharing of effective practice
- 3. Build effective partnerships to encourage partners to embed public engagement in their work:** by informing, influencing and interpreting policy

The **NCCPE's website**<sup>2</sup> contains a wealth of resources to support both the leadership and delivery of excellent public engagement and 60 UK universities are committed at senior leadership level through our **Manifesto for Public Engagement**<sup>3</sup> to transform support for public engagement with research within their organisations.

The **EDGE tool**<sup>4</sup> enables institutions to self-assess how effectively they are supporting public engagement and has been widely used across the sector to drive improvements.

The bi-annual **Engage competition**<sup>5</sup> and annual **Engage conference**<sup>6</sup> provide important platforms for excellence in engagement to be shared, celebrated and built on.

The NCCPE runs a programme of **professional development**<sup>7</sup> and skills sharing events, and coordinates a number of significant **culture change** projects which bring together university partnerships to develop more effective practice, including the **Catalyst for Public Engagement projects**<sup>8</sup> and an Arts Council England funded project to develop more strategic partnership working between **universities and museums**<sup>9</sup>.

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<sup>1</sup> <https://www.publicengagement.ac.uk/>

<sup>2</sup> <https://www.publicengagement.ac.uk/>

<sup>3</sup> <https://www.publicengagement.ac.uk/support-it/manifesto-public-engagement>

<sup>4</sup> <https://www.publicengagement.ac.uk/support-it/self-assess-with-edge-tool>

<sup>5</sup> <https://www.publicengagement.ac.uk/work-with-us/engage-competition-2016>

<sup>6</sup> <https://www.publicengagement.ac.uk/work-with-us/nccpe-engage-conference>

<sup>7</sup> <https://www.publicengagement.ac.uk/work-with-us/continued-professional-development-cpd-training>

<sup>8</sup> <https://www.publicengagement.ac.uk/work-with-us/current-projects/catalysts-project>

<sup>9</sup> <https://www.publicengagement.ac.uk/work-with-us/current-projects/museum-university-partnerships-initiative>

Through the NCCPE's **ambassador scheme**<sup>10</sup> and **Community Partner network**<sup>11</sup> we support 100s of individuals within their organisations and community groups across the UK to foster change and support for public engagement with research, including science and science communication.

Based in Bristol, the NCCPE is hosted by the University of Bristol and the University of the West of England.

### Executive summary

1. The consultation invites responses to the question: **How can Government, scientists, the media and others encourage and facilitate public awareness of – and engagement in – science?**
2. We want to start on a **positive note**. The last 20 years have seen very significant developments in how public engagement with research is valued and supported. We have seen a move from 'communicating science' (to a relatively passive public) to creating more interactive and meaningful encounters and engagement between the public and the research and policy communities.
3. The NCCPE defines public engagement as follows: *'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'*.
4. Our focus in this submission is on the **higher education sector**, and there is evidence that public engagement is slowly but surely becoming **embedded** within the research community. There is a much clearer, more nuanced understanding of the multiple **benefits of engagement** to individuals and institutions and recognition of how it contributes to trust, accountability, relevance and social responsibility. Many universities are now making strong **business cases**<sup>12</sup> for public engagement.
5. More broadly, there is an increasingly **well-coordinated** wider network of organisations and networks committed to consolidate this momentum. Government has played an important role in encouraging and investing in these developments encouraging researchers to be more engaged with society.
6. However, progress is slow, as change takes time, and much remains to be done. **Strong leadership** from government is required to ensure that public engagement with University research, and specifically with science, remains a priority, building on the momentum to date, and creating a research culture where such engagement thrives.
7. Investment in collective activity at a national level is critical if the on-going changes are to be consolidated. Initiatives such as The **Concordat for Engaging the Public with Research**<sup>13</sup> and the **National Forum for PE in STEM**<sup>14</sup> provide much needed alignment across the many and varied organisations supporting scientists and scientific researchers to engage with the public. The **NCCPE's** national remit – working across the four nations of the UK and with international reach, helps to ensure that good practice can be shared effectively and momentum sustained.

<sup>10</sup> <https://www.publicengagement.ac.uk/work-with-us/ambassador-scheme>

<sup>11</sup> <https://www.publicengagement.ac.uk/work-with-us/uk-community-partner-network>

<sup>12</sup> <https://www.publicengagement.ac.uk/explore-it/why-it-important/business-case-public-engagement>

<sup>13</sup> <http://www.rcuk.ac.uk/pe/Concordat/>

<sup>14</sup> <https://www.publicengagement.ac.uk/work-with-us/current-projects/national-forum-public-engagement-stem>

8. We need to continue to address the factors which **inhibit scientists** and researchers from engaging with the public. The 2006 Factors Affecting Science Communication survey<sup>15</sup> identified how the **professional culture** of science discourages public engagement. Scientists often do not feel valued or supported to engage with the public. Efforts to address this have begun to change this – but there is much still to do. Too often, public engagement is still viewed as a marginal activity on the fringes of organisations. It needs to be seen as a critical **strategic priority** and people need to be **appropriately supported** to do it well. The Factors Survey<sup>16</sup> was run again in 2015, and extended to include researchers across all disciplines. The results indicated positive trends in the support offered to researchers, but there is still considerable scope for improvement. Too often, public engagement is still viewed as a marginal activity on the fringes of organisations. It needs to be seen as a critical **strategic priority** and people need to be **appropriately supported** to do it well. Support to foster learning across subject disciplines is also crucial.
9. To consolidate these positive developments, investments in **culture change** need to be sustained. The **Beacons for Public Engagement**<sup>17</sup>; the **RCUK Public Engagement with Research Catalysts**<sup>18</sup>; the **Catalyst Seed Fund**<sup>19</sup> projects and the **School-University Partnership**<sup>20</sup> programmes have all demonstrated how concerted efforts by university leaders combined with investment in coordination and support can realise significant improvements.
10. The NCCPE has played a key role ensuring that the institutions involved draw on good practice, and that learning from the projects is shared with the wider sector. **Sustained investment to carry forward the learning from these projects is vital** to realise the considerable gains, including building public trust in science and research, which will result from a research culture which supports researchers to engage effectively with the public.
11. We need to place increasing emphasis on achieving **excellence** in PE. The recent Research Excellence Framework<sup>21</sup> required researchers to submit case studies to demonstrate the societal impact of their research. Nearly half of these made some mention of engagement with the public, but in many cases the quality of the evidence submitted was weak. The NCCPE is focussing efforts on how to enhance the **quality of planning, delivery and evaluation** of public engagement ensuring engagement is fit for purpose, and delivers significant and demonstrable societal impact.
12. We see government **as a key partner** in our collective efforts to address these system-wide challenges to support efforts to exact societal outcomes, including trust in public engagement with scientific research and trust of science

<p><b>The trends in attitudes to science, and public engagement with science</b></p>
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13. Much has changed over the last 15 years, since the publication of the **Third Report of the Select Committee on Science and Technology**<sup>22</sup> in 2000, which identified that: “*Society’s*

<sup>15</sup> [https://royalsociety.org/~media/Royal\\_Society\\_Content/policy/publications/2006/1111111395.pdf](https://royalsociety.org/~media/Royal_Society_Content/policy/publications/2006/1111111395.pdf)

<sup>16</sup> <http://www.wellcome.ac.uk/About-us/Publications/Reports/Public-engagement/WTP060031.htm>

<sup>17</sup> <https://www.publicengagement.ac.uk/work-with-us/completed-projects/beacons>

<sup>18</sup> <https://www.publicengagement.ac.uk/work-with-us/current-projects/catalysts-project>

<sup>19</sup> <https://www.publicengagement.ac.uk/work-with-us/current-projects/catalyst-seed-fund>

<sup>20</sup> <https://www.publicengagement.ac.uk/work-with-us/current-projects/school-university-partnerships-initiative>

<sup>21</sup> <http://impact.ref.ac.uk/CaseStudies/>

<sup>22</sup> <http://www.publications.parliament.uk/pa/ld199900/ldselect/ldsctech/38/3802.htm>

*relationship with science is in a critical phase. Public confidence in scientific advice to Government has been rocked by BSE; and many people are uneasy about the rapid advance of areas such as biotechnology and IT. This crisis of confidence is of great importance both to British society and to British science*". Following this report, a range of interventions were made to address the potential breakdown of trust and understanding, including the establishment of the **Science Media Centre**<sup>23</sup> and the **Sciencewise** expert resource centre<sup>24</sup>; the **Factors Affecting Science Communication**<sup>25</sup> research in 2006; the **Concordat for Engaging the Public with Research** in 2011<sup>26</sup>; the **BIS Charter for Science and Society** in 2014<sup>27</sup>; and the various investments to secure strategic support for PE in universities, coordinated by **National Coordinating Centre for Public Engagement**<sup>28</sup> (2008).

14. So what do we know about how public attitudes to science have changed over this period? The **PAS 2014 survey**<sup>29</sup> highlights the enthusiasm of the UK public about science, and how attitudes to science in the UK have become increasingly positive over a longer period of time, with 55% in 2014 agreeing that the benefits outweigh the harmful effects, compared to 45% in 1988. PAS 2014 also shows how the public see science as beneficial to society, both in terms of economic growth and the value it brings to their lives, and therefore continue to support government funding of science. Scientists have a **high degree of trust** from the UK public, with a marked difference in trust for those working for universities (90%) compared to those working for private companies (60%).
15. The UK public overwhelmingly think it is important to know about science given the importance of it to their daily lives, but **more people (55%) 'do not feel informed', than 'feel informed' (45%) about science, scientific research and developments**. There is a considerable appetite for hearing more about science – **only 6% say they see and hear too much about science, while 51% think they see and hear too little**.
16. These generally positive changes in public attitudes are paralleled by significant changes in how the **research community** approaches engagement with the public. We have seen a shift away from treating the public as 'empty vessels' to be told about research and why it is good, to a more respectful conversation which acknowledges that the public may have questions and ethical concerns about science and research; that their curiosity needs to be stimulated; that they have insights and expertise to share, and an appetite to get directly involved e.g. through citizen science, where the public contribute directly to scientific research: and a **shift from 'one way communication' to 'engagement', dialogue and citizen-led innovation**.
17. The NCCPE bi-annual **Engage competition**<sup>30</sup> provides an opportunity to **recognize and reward excellence** in public engagement with research. The 2014 winners demonstrate the diversity of approaches taken to engagement; the critical role of evaluation in informing the approach; and the many different publics engaged. The overall winner, the CAER heritage project<sup>31</sup>, is a long term engagement project on the outskirts of Cardiff, in an area of high social deprivation. Through a range of interventions, local people have had the opportunity to get involved in researching a local hill fort.

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<sup>23</sup> <http://www.sciencemediacentre.org/>

<sup>24</sup> <http://www.sciencewise-erc.org.uk/>

<sup>25</sup> [https://royalsociety.org/~media/Royal\\_Society\\_Content/policy/publications/2006/111111395.pdf](https://royalsociety.org/~media/Royal_Society_Content/policy/publications/2006/111111395.pdf)

<sup>26</sup> <http://www.rcuk.ac.uk/documents/scisoc/concordatforengagingthepublicwithresearch-pdf/>

<sup>27</sup> <https://scienceandsociety.blog.gov.uk/uk-charter-for-society>

<sup>28</sup> <http://www.publicengagement.ac.uk/>

<sup>29</sup> <https://www.gov.uk/government/publications/public-attitudes-to-science-2014>

<sup>30</sup> <https://www.publicengagement.ac.uk/work-with-us/engage-competition-2016>

<sup>31</sup> <https://www.publicengagement.ac.uk/news/nccpe-engage-competition-2014-award-winners-announced>

18. We have also seen sustained efforts to **tackle the culture of science**, to address the factors which make it difficult for scientists to engage. The Factors Affecting Science Communication<sup>32</sup> research in 2006 revealed a number of ways in which the professional culture of science was inhibiting scientists from engaging with the public. The revised and re-run survey in 2015<sup>33</sup> revealed a **positive shift** in researchers' understanding and attitudes to public engagement over the past ten years. Despite the survey finding that researchers are now considerably more personally motivated in this area, it also highlights that considerable challenges remain. Public engagement often struggles to compete for time and resources within the context of a profession that is overwhelmingly driven by reward and recognition for research itself. There is further potential that could be tapped within systems of greater reward for public engagement. Many researchers also find it difficult to find opportunities to participate in public engagement activities and some indicate the value of an **enabler or broker** to get them started.
19. Addressing these barriers requires strong leadership and investment in coordination and support. The Beacons for Public Engagement project (2008-2012) began a series of investments to galvanise such activity. The more recent Catalysts for Public engagement project (funded by RCUK) involved 8 universities in three year change programmes. The final reports<sup>34</sup> reveal how these projects realised significant changes in the following areas:
- **Strategic changes:** e.g. embedding a commitment to public engagement with research (PER) in corporate plans; the development of new, shared understandings of PER at institutional level and their definition and articulation in university-wide strategic documents.
  - **Operational changes:** e.g. new structures which provide co-ordination and visibility for previously disparate PER activity; increased practical support and new resources for PER.
  - **Attitudinal changes:** e.g. increased motivation and enthusiasm for PER amongst staff; more cross-university understanding of the role, importance and value of public engagement with research, particularly in terms of being a legitimate and valued component of research roles within HEIs.
- Such changes are impressive and palpable. However, they require **long term resourcing and strong leadership** if the initial gains are to be sustained.
20. The NCCPE works with HE institutions specifically to support them to develop more effective support for engagement. Over 60 institutions have signed up to the Manifesto for Public Engagement, and we are working with senior leaders across the UK to help cultivate effective public engagement in their institutions. To this end we are soon to launch the Engagement Chartermark – and opportunity for institutions to assess their support for public engagement using the EDGE tool, and develop an effective strategy to improve their approach over the next 4 year period. This is a critical intervention, enabling institutions to reflect on their approach, tackle key challenges, and create an environment where engagement can thrive.
21. In summary, the findings highlight considerable progress but suggest that more needs to be done to support, reward and recognise researchers to embed public engagement as an integral part of a research career. **Government commitment to public engagement as a key part of the research landscape needs to continue to help develop this work.**

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<sup>32</sup> [https://royalsociety.org/~media/Royal\\_Society\\_Content/policy/publications/2006/1111111395.pdf](https://royalsociety.org/~media/Royal_Society_Content/policy/publications/2006/1111111395.pdf)

<sup>33</sup> <http://www.wellcome.ac.uk/About-us/Publications/Reports/Public-engagement/WTP060031.htm>

<sup>34</sup> <http://www.rcuk.ac.uk/pe/catalysts/reports/>

**The balance of effort needed to increase public engagement in science by ‘new audiences’ and by the ‘already interested’.**

22. Public Engagement with research plays a vital role in **inspiring people to learn, gain new skills and raising ambitions**. It helps build a **research literate society**, essential to effective and robust decision-making. And finally, where there is **diversity in participation** it can lead to reframed notions of science and research. The case for widening the audiences engaged with research is compelling. Numerous reports and critiques have identified that – despite considerable effort – many groups are currently ‘underserved’ by public engagement.
23. It is challenging to develop engagement projects that reach beyond the ‘**usual suspects**’: it is easy to assume that people will be interested in the same things as you are, will learn in a similar way, will attend the kind of venues and types of events that you enjoy; will have a similar educational and social background to your own; and will share your values. If we want to see changes in how we engage a wider cohort of publics in our work we need to consider approaching the challenge differently.
24. The NCCPE provides support to researchers and professional staff in universities to widen the reach of their engagement activities. This support includes offering **professional development**<sup>35</sup>: our workshop ‘Research in Context’ helps participants to recognise the different values and expectations of the public. We also point researchers to **methods and techniques**<sup>36</sup> which help, for instance through our summary of approaches to **audience segmentation**<sup>37</sup>, and through a variety of guides and **case studies**<sup>38</sup>. We urge researchers to work with **intermediary organisations** who have strong and trusted roles in different communities to help mediate that engagement in a respectful and professional way. Our **Community Partner Network**<sup>39</sup> works to support such organisations to work more effectively with colleagues in universities.
25. Investment in research and innovation in this area is also vital. We need more **intelligence and insight** into why certain groups are less engaged than others, and to assess the effectiveness of different kinds of approaches and to invite community ambassadors from these groups to share insights and contribute to how to lead on change. An example of such work would be the Enterprising Science project being led by Kings College London. This project has developed the concept of **Science Capital**<sup>40</sup>. Often, people think that the barriers to science engagement are because people ‘don’t like’ science and we simply have to make it appear more interesting and/or more relevant and this will fix the problem. Science capital suggests that there are other, more significant factors that account for why some people are dis-engaged. The team at Kings College London define Science Capital as follows:

*The concept of science capital can be imagined like a ‘holdall’, or bag, containing all the science-related knowledge, attitudes, experiences and resources that you acquire through life. It includes what science you know, how you think about science (your attitudes and dispositions), who you know (e.g. if your parents are very interested in science) and what sort of everyday engagement you have with science. Research*

<sup>35</sup> <https://www.publicengagement.ac.uk/work-with-us/continued-professional-development-cpd-training>

<sup>36</sup> <https://www.publicengagement.ac.uk/do-it/techniquesapproaches>

<sup>37</sup> [https://www.publicengagement.ac.uk/sites/default/files/publication/segmenting\\_publics\\_2\\_nov\\_2011.pdf](https://www.publicengagement.ac.uk/sites/default/files/publication/segmenting_publics_2_nov_2011.pdf)

<sup>38</sup> <https://www.publicengagement.ac.uk/case-studies>

<sup>39</sup> <https://www.publicengagement.ac.uk/work-with-us/uk-community-partner-network>

<sup>40</sup> <http://www.kcl.ac.uk/sspp/departments/education/research/cppr/Research/currentpro/Enterprising-Science/01Science-Capital.aspx>

*evidence shows that the more science capital a young person has, the more likely s/he is to aspire to continue with science post-16 and to see themselves as having a science identity.*

26. The more of the following that a young person has, the more likely they are to plan to continue with science in the future. The research suggests that **only 5% of the population have high science capital, and 27% have low science capital.**
27. The NCCPE is currently coordinating a project for the National Forum for PE with STEM to review approaches to reaching 'under-served' audiences. The focus is on developing **more equitable access** to science for underserved groups. To do this we are currently reviewing the different rationales which underpin the interventions members are making in this area, with a view to better understanding '**what works**', and to share this more effectively. By working collaboratively we believe we can more quickly accelerate progress in this area. Further support to learn from and exchange learning across the HE sector and with the cultural sector is vital, to encourage and support best practice.

**Any further steps needed by the media and broadcasters to improve the quality, accessibility and balance of their science coverage; and science coverage in broadcasters' programme-making.**

28. **Interaction between researchers and the media** has the potential to generate both great 'reach' (in terms of the numbers of people who are engaged) and significant 'depth' (in terms of the quality of the learning and involvement that is generated). While it is easy to focus on the remarkable popularity of a handful of 'celebrity' researchers, like Brian Cox, Alice Roberts, Maggie Aderin-Pocock and Jim Al Khalili, there is an increasing amount of effective partnership activity going on (often behind the scenes) which should be recognised and supported.
29. **The REF impact case studies** featured numerous examples of researcher groups and media professionals working together over sustained periods of time to develop high quality content which reached very wide audiences. Examples include:
  - The **Reading the Riots**<sup>41</sup> project saw the LSE working with the Guardian to establish a joint research project following the 2011 riots in England. The ensuing research achieved very wide reach via conventional print and other media, informing public understanding of the riots and challenging conventional wisdom about their causes and had significant influence on government policy.
  - **Public Engagement with Deep-Ocean Research**<sup>42</sup> details the exceptional work of the Earth Sciences department at the University of Southampton to develop print, online, and broadcast media content that has engaged millions of people, complemented by a series of talks and events and a suite of interactive online resources that has enabled people worldwide to follow their exploration of deep-ocean environments and their biodiversity. The sustained and strategic approach to their work is exemplary, and provides a powerful model for other departments to emulate
30. Other examples of such sustained collaboration include the partnership between the BBC and the LSE to investigate **social class in Britain**<sup>43</sup>. The BBC ran the largest ever survey of social class in 2011 (with over 160 thousand responses). The researchers' analysis of the

<sup>41</sup> <http://impact.ref.ac.uk/CaseStudies/CaseStudy.aspx?Id=40381>

<sup>42</sup> <http://impact.ref.ac.uk/CaseStudies/CaseStudy.aspx?Id=42992>

<sup>43</sup> [http://eprints.lse.ac.uk/49654/1/Savage\\_New\\_model\\_social\\_class\\_2014.pdf](http://eprints.lse.ac.uk/49654/1/Savage_New_model_social_class_2014.pdf)

data revealed how the conventional occupationally based class schema did not effectively capture the reality of class today, leading to the development of a new multi-dimensional model of social class.

31. These examples indicate how not only individual researchers but larger research groups can develop really significant collaborations with the media which deliver both high quality and content and **significant new research insights**
32. Such **sustained collaborations** should be encouraged. Other notable examples of how researchers and media organisations are collaborating include:
  - The AHRC's **New Generation Thinkers**<sup>44</sup> is a successful collaboration between AHRC and BBC Radio 3 for early career researchers to work with BBC producers through a series of dedicated workshops to appear on television and radio to communicate their research
  - The **Conversation**<sup>45</sup> is an online news site set up to combine 'academic rigour with journalistic flair'. Supported by a range of sponsors including many universities, and with pump priming from HEFCE, it has developed an innovative editorial model which sees researchers working with journalists to co-produce content. It has a monthly audience of 3 million users, and a reach of 29 million through re-publication
  - The BBC's **Ideas Service / New Age of Wonder**<sup>46</sup> project is an important development, representing an ambitious attempt to coordinate public engagement with science across a large network of organisations. The ambition is create a much more 'joined up' offer for the public and provide them with opportunities to pursue their interests across multiple outlets.
  - The **BBC / Open University partnership**<sup>47</sup> continues to commission excellent content and invest in 'learning journeys' that enable audiences to take their interests further and which bring learning to live in imaginative new ways, for instance through their 'History of Ideas'<sup>48</sup> - developed in partnership with Radio 4, this offers a series of animated films exploring some of the big questions which have preoccupied thinkers down the ages.
33. It is important to note the transformative potential role of the **internet, social media and digital communication technologies** (e.g. smartphones and drones) in shifting the broadcast model from one way to two way engagement with the public. It will be important to research and identify the **new opportunities for public engagement**<sup>49</sup> with research that digital technologies, emerging technologies and the digital economy can offer. This would include, but not exclusively, the role of citizen science<sup>50</sup>, and citizen journalism, which is enhanced through the internet and the relative merits, drawbacks and opportunities this brings for fostering public engagement with scientific research and science journalism.

**The communications strategies being taken to encourage young people to study STEM subjects in higher and further education, and to encourage those people towards STEM careers.**

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<sup>44</sup> <http://www.bbc.co.uk/mediacentre/latestnews/2015/r3-new-gen-thinkers>

<sup>45</sup> <http://theconversation.com/uk>

<sup>46</sup> <http://www.bbc.co.uk/news/entertainment-arts-34168310>

<sup>47</sup> [http://www.open.ac.uk/courses/choose/bbc?ONEML=mx074&MEDIA=mx074ou\\_eml10](http://www.open.ac.uk/courses/choose/bbc?ONEML=mx074&MEDIA=mx074ou_eml10)

<sup>48</sup> <http://www.open.edu/openlearn/whats-on/radio/history-ideas>

<sup>49</sup> <https://www.thersa.org/discover/publications-and-articles/reports/the-new-digital-learning-age>

<sup>50</sup> <http://www.socientize.eu/?q=eu/content/white-paper-citizen-science>

34. Universities play a critical role in supporting efforts to encourage young people to study STEM subjects, and to encourage young people towards STEM careers. In this submission we want to focus on one particular area of activity: how university researchers can build **effective partnerships** with schools to both enrich the curriculum and stimulate interest in STEM careers. Certainly communication strategies are an important part of such activity, but a bigger challenge and more important focus should be on developing more sustained and productive partnerships between schools and universities.
35. The NCCPE is currently coordinating an RCUK funded programme, The School-University Partnership Initiative<sup>51</sup> (SUPI) which is developing useful new insights into how to enhance the **quality of collaboration** between schools and universities. A research synthesis<sup>52</sup>, commissioned as part of this project, revealed some significant problems in how these partnerships currently work: *'High hopes have been held for school-university partnerships at different points in time and in different parts of the world, but successive evaluations have found that those hopes remain unfulfilled in many cases due to a 'litany of barriers'. The root of the challenge seems to lie in the deep cultural differences between the two sectors. These differences are enshrined in different accountability structures, operating models and languages, which then drive individual and organisational behaviour. Other factors compound the challenge, not least the sheer logistical challenges of partnering one, complex university with multiple schools' (p.6)*
36. The SUPI project was established to address such **barriers**. Its aim is to support secondary schools and HEIs to work together to create structured, strategic, sustainable and equitable mechanisms for school-university engagement which increase the breadth and quality of interactions between researchers and school students. 12 different school-university partnerships have developed different responses to this challenge.
37. The SUPI projects have provided significant learning about the importance of developing approaches that are sensitive to the needs, pressures and opportunities of all involved. Working with the SUPI teams the NCCPE has developed a SUP **assessment tool**, which enables school university partnerships to assess their approach looking through the lenses of the teacher, pupil, researcher and the engagement brokers. This framework encourages more effective reflection on how schools and universities can work together effectively – ensuring that the work they do is fit for purpose, and enhances student learning.
38. The SUPI project has clearly demonstrated that partnership work between schools and universities can:
- Enhance student learning and promote scientific citizenship
  - Support pupils as researchers e.g. through researchers supporting Extended Project Qualifications
  - Improve teacher confidence in teaching their subject well
  - Open up broader understanding of research across different disciplines
  - Develop tailorable resources for use by a wider group of schools
  - Develop researchers skills and confidence in engaging others with their research

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<sup>51</sup> <http://www.publicengagement.ac.uk/work-with-us/current-projects/school-university-partnerships-initiative>

<sup>52</sup> [https://www.publicengagement.ac.uk/sites/default/files/publication/supi\\_project\\_report\\_final.pdf](https://www.publicengagement.ac.uk/sites/default/files/publication/supi_project_report_final.pdf)

39. Other research provides useful and important intelligence to help guide future interventions. One example is the ESRC-funded **ASPIRES study**<sup>53</sup> which has sought to shed new light on our understanding of how young people's aspirations develop over the 10-14 age group, exploring in particular what influences the likelihood of a young person aspiring to a science-related career. ASPIRES found that there is a widespread association of science/scientists with 'braininess' and that this association influences many young people's views of science careers as 'not for me'. The researchers recommend that greater diversity in popular and media representations of 'who does science' could help further loosen the association between science and braininess. ASPIRES 2<sup>54</sup> 14-19 will continue this research over the next five years.
40. **Science Learning+**<sup>55</sup> is an international initiative established by the Wellcome Trust in partnership with the US-based National Science Foundation and ESRC. The £9 million scheme aims to make a transformational step to improve the knowledge base and practice of informal science experiences, to better understand, strengthen and coordinate their vital role in science engagement and learning. The scheme will increase the sector's understanding of how the broader education ecosystem, which includes informal learning experiences, can support and promote science learning

**The extent to which public dialogue and consultation is being effectively used by Government in science and technology areas of policy-making.**

41. **It is vital that public dialogue becomes more embedded in Government policy making in science and technology.** The benefits – in terms of strengthening trust, accountability social and ethical sensitivity – are well documented<sup>56</sup>.
42. It is clear that the public want to see **more public involvement**. PAS 2014<sup>57</sup> highlights the clear expectation that regulators, government and scientists should engage in dialogue with the public. Seven-in-ten people think that scientists should listen more to what ordinary people think. Even more (75%) feel that the Government should act in line with public concerns about science and that regulators need to communicate with the public (88%).
43. There is now a very significant body of excellent public dialogue projects which have demonstrated the value of bringing together members of the public, policy makers, researchers and other expert stakeholders to deliberate and come to conclusions on national public policy issues involving science and technology. Some of the **positive impacts** of public dialogue are reported as<sup>58</sup>:
- **Better policy solutions** that are more robust, legitimate, socially informed and socially acceptable as they are based on a richer and wider evidence base. Dialogue has provided 'political' confidence to policy makers by clarifying public views on difficult decisions (e.g. stronger regulation), and by identifying and testing levels of public concerns and aspirations, why they hold those views and what affects them. It has also provided 'practical' confidence by drawing on public knowledge and experience to find new ideas for policy and services that better meet public needs. Good public dialogue

<sup>53</sup> <http://www.kcl.ac.uk/sspp/departments/education/research/aspires/aspires-final-report-december-2013.pdf>

<sup>54</sup> <http://www.kcl.ac.uk/sspp/departments/education/research/aspires/aims.aspx>

<sup>55</sup> <http://www.wellcome.ac.uk/slplus>

<sup>56</sup> <http://www.sciencewise-erc.org.uk/cms/value-and-benefits-of-dialogue/>

<sup>57</sup> <https://www.ipsos-mori.com/researchpublications/researcharchive/3357/Public-Attitudes-to-Science-2014.aspx>

<sup>58</sup> <http://www.sciencewise-erc.org.uk/cms/assets/Uploads/Strategic-Research-documents/Evidence-CountsSummary-report.pdf>

can also increase the legitimacy for tough decisions and help overcome entrenched positions to enable policy to move forward.

- **Better policy and decision-making processes** that are more open and transparent, and subject to public scrutiny. Public input can help improve communications planning (identifying more appropriate messages), risk management (identifying potential areas of conflict and consensus early) and better internal communications by providing a focus for considering how issues can best be discussed with the public.
- **Savings of time and money** in launching and implementing policy solutions by finding appropriate and acceptable policies that can be easily and quickly implemented with minimal conflict and controversy.

44. There is a general capacity issue in terms of supporting public dialogue and Government departments and agencies are unlikely to have the in-house experience or expertise to deliver a specialist public dialogue. The **Sciencewise Expert Resource Centre**<sup>59</sup> (Sciencewise-ERC) is a BIS funded programme which provides co-funding and specialist advice and support to Government departments and agencies to support them to identify when a public dialogue is appropriate and to develop and commission public dialogue activities. This access to best practice and support is critical for effective public dialogue and to build capacity in this area. At the time of writing, the Sciencewise programme is currently awaiting a decision on its future. We would argue that future support for Sciencewise or a similar capability is a vitally important part of a well-functioning public engagement system.

**The strategies and actions being taken by Government to foster public engagement and trust of science more widely, and high quality reporting of science in the media.**

45. As our response makes clear, there has been steady progress over the last 20 years to embed public engagement as a strategic priority in research organisations; to develop the quality of engagement; to diversify the audiences engaged; to involve the public in more active ways; to increase the funding available; and to increase the capacity of people to deliver it well. But this is still very much ‘work in progress.’ It is worth summarising some of the ground that has been gained.

46. We have seen **funders of science** develop a range of pathways to encourage researchers to build public engagement into their work, and seek appropriate funding to resource it. Examples include RCUK’s **Pathways to Impact**<sup>60</sup>; the inclusion of impact assessment within the **Research Excellence Framework**<sup>61</sup> (REF) and the **Wellcome Trust’s Provision for Public Engagement**<sup>62</sup>. The **National Institute for Health Research**<sup>63</sup> (NIHR) was established in 2006 and has been the first research organisation in the world to establish a national advisory group, INVOLVE<sup>64</sup>, to make sure the views of patients and the public are an essential part of the processes through which research is identified, prioritised, commissioned, designed, conducted and disseminated.

47. We were pleased to see that the **Nurse review**<sup>65</sup> of the research councils placed a strong emphasis on the strategic importance of public engagement:

<sup>59</sup> <http://www.sciencewise-erc.org.uk/>

<sup>60</sup> <http://www.rcuk.ac.uk/innovation/impacts/>

<sup>61</sup> <http://www.ref.ac.uk/>

<sup>62</sup> <http://www.wellcome.ac.uk/Funding/Public-engagement/Engagement-with-your-research/Funding-within-research-grants/index.htm>

<sup>63</sup> <http://www.nihr.ac.uk/>

<sup>64</sup> <http://www.invo.org.uk/>

<sup>65</sup> <https://www.gov.uk/government/collections/nurse-review-of-research-councils>

*For a national research endeavour to be successful there needs to be an effective dialogue and understanding between research scientists, politicians and the public, so that policies and strategies are in place to bring about research that benefits society, and that society will support. Without this engagement and societal endorsement, the research endeavour will ultimately stall or even fail (p.8).*

48. While these new pathways to access funding are to be welcomed, there is more work to be done to encourage researchers to **plan and resource** purposeful and targeted engagement into their activity at all stages of the research cycle; and to improve the rigour and consistency with which such proposals are assessed.
49. We have seen significant investment in **impactful research** into the factors which inhibit or help people to engage with science. The ASPIRES<sup>66</sup> project, Enterprising Science<sup>67</sup> and the Science Learning Plus<sup>68</sup> projects are all providing much needed, rigorous **evidence** to inform future investments and activity.
50. Led by RCUK, the **Concordat for Engaging the Public with Research**<sup>69</sup> has over 50 signatories and supporters and provides a single unambiguous statement regarding the importance of public engagement from the UK funders of Research. Supporters and signatories include the Research Councils and government departments such as BIS and DEFRA. It sets out clear expectations to ensure that researchers are recognised, rewarded and supported for their public engagement by the HE Sector.
51. We have seen concerted efforts to **embed public engagement within the culture of science**. The **Beacons for Public Engagement**<sup>70</sup> (2008-2012) were university-based collaborative centres to help support, recognise, reward and build capacity for public engagement work across the UK. Funded by RCUK, the UK funding councils and the Wellcome Trust, this initiative sought to bring about a step-change in recognition for public engagement across the higher education sector. The **National Coordinating Centre for Public Engagement** (NCCPE<sup>71</sup>) was established (and continues to be funded) to inspire and support universities to engage with the public and to embed strategic support across their activities, and provides practical support for researchers. RCUK (through the **Catalysts for Engaging the Public with Research**<sup>72</sup>, **Catalyst Seed Fund**<sup>73</sup> and the **School-University Partnerships Initiative**<sup>74</sup>) are continuing to invest in embedding PE with research in universities' policies and practices.
52. Over the past 5 years there has been an increase in the number of professional staff working as **engagement brokers**. The NCCPE provides much needed professional development for these people through the Public Engagement Academy<sup>75</sup> programme, and the National Engage conference.
53. We have seen an increasing focus on how the 'system' as a whole works: moving from investment in a set of separate activities to a more **coordinated and joined up approach**. This is exemplified in the BIS Science and Society programme, and in the establishment of the **National Forum for Public Engagement in STEM**.

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<sup>66</sup> <http://www.kcl.ac.uk/sspp/departments/education/research/aspires/aspires-final-report-december-2013.pdf>

<sup>67</sup> <http://www.kcl.ac.uk/sspp/departments/education/research/cppr/Research/currentpro/Enterprising-Science/index.aspx>

<sup>68</sup> <http://www.wellcome.ac.uk/Funding/Public-engagement/Funding-schemes/Science-Learning/index.htm>

<sup>69</sup> <http://www.rcuk.ac.uk/pe/Concordat/>

<sup>70</sup> <http://www.rcuk.ac.uk/pe/beacons/>

<sup>71</sup> <http://www.publicengagement.ac.uk/>

<sup>72</sup> <http://www.rcuk.ac.uk/pe/catalysts/>

<sup>73</sup> <http://www.rcuk.ac.uk/documents/scisoc/rcukcatalystseedfundguidance-pdf/>

<sup>74</sup> <https://www.publicengagement.ac.uk/work-with-us/current-projects/school-university-partnerships-initiative>

<sup>75</sup> <https://www.publicengagement.ac.uk/work-with-us/cpd-training/public-engagement-academy-2016-2017>

54. We would urge Government to sustain the momentum that these developments have created. In particular we would point the committee to the **BIS Science and Society programme** and the resulting Charter<sup>76</sup>. These provide a useful, shared framework to direct future activity. The Charter identifies three clear priorities which provide a useful backbone to focus future activity and we commend these to the committee:

- **PRINCIPLE 1:** Organisations adopt a strategic commitment to improving the relationship between science and society
- **PRINCIPLE 2:** Organisations and individuals are enabled to participate in activities and have appropriate training, support and opportunities
- **PRINCIPLE 3:** The signatories and supporters undertake to monitor and evaluate impact in order to continuously improve the relationship between science and society across the UK

55. In practice, **Government** can support these principles by:

- Recognising how science communication has evolved since 2006 **from one-way to two-way public engagement**, but that further work is required to sustain this progress
- Demonstrating its **own commitment** to public engagement in the ways it develops and delivers policy through a culture of openness and transparency; by appropriately engaging the public in dialogue around emerging areas of policy; and by ensuring that different departments work together in a **more coordinated way** on this agenda
- Continuing to affirm the **strategic importance** of public engagement with research and expecting organisations they fund to do the same
- Leveraging public investment in science and culture to incentivise excellence in engagement, recognising that engagement requires **enabling resources and expertise** to be done well
- Continuing to invest in **infrastructure** that catalyses more effective support for and uptake of public engagement
- Continuing to address the need for **culture change** in the research profession, recognising that engagement should be a core professional competence of researchers and policy makers
- Encouraging **collaboration and partnerships** to 'join up' and learn across initiatives and sectors, in particular, to align public engagement with the wider cultural sector
- Continuing to invest in **evaluation and research** to sustain a thriving, learning culture where continuous improvement is the norm
- Encouraging **creativity and innovation** as well as building on 'what works'

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<sup>76</sup> <https://scienceandsociety.blog.gov.uk/uk-charter-for-society/>