thinktank
Birmingham science museum

Ways that scientists can get involved in public engagement

Over the last 20 years, the importance of scientists becoming more engaged with 'the public' has not only changed direction, but has also changed in emphasis. What was once passively supported is now very much being actively encouraged and to a certain extent, even required as part of being a STEM professional – certainly within a University environment.

Most funding bodies ask that scientists actively engage with 'the public' as part of their research award. A number of the grant awarding bodies have schemes and grants that help and support scientists in their public engagement activities. Most of the time, they will still need to be very independent however. The biggest mistake that people make when they first start out in public engagement is to assume that because they are a scientist, they are automatically the best person to communicate science. It is more the case that if you are a good communicator AND a scientist, then you will be in a much better position to engage with the public on scientific issues. The most important part is being the good communicator and this can be improved through training and/ or experience and can always be improved further.

The second biggest mistake that people make is to 'reinvent the wheel'. There are a number of people who have been carrying out public engagement for a long time and they have all learned a great deal through the mistakes that they have made. There are a number of resources available that make the most of this experience; this does not mean that scientists should not improve on previous resources and/ or develop their own style but a lot of people make the same basic mistakes.

Also bear in mind that with the current atmosphere of Health and Safety and Safeguarding, researchers might also need to plan ahead for any project that they carry out. This may require Police checks (CRB), risk assessments and in some circumstances public liability insurance. These are things that are actually very easy to fulfil and get easier with experience but people have to consider that there may be more than simply turning up and having fun!

The final and perhaps most important thing about public engagement is that no-one is ever alone! If you have woken up this morning and stumbled across this document with the thought of doing public engagement and are looking for inspiration, then A) Good for you! and B) Talk to other people about it! There are lots of organisations, networks and services for public engagement and you should never feel alone whilst you are doing it.

The remainder of this document describes these support services and what they might be able to offer you to help you deliver your public engagement.

Thinktank Birmingham Science Museum

Thinktank Birmingham Science Museum is one of the UK's busiest science museums, a visitor attraction and a learning-focussed cultural organisation all under one roof – including the outdoor science garden. As well as our drive to make the collections more accessible to

our visitors, we are also committed to engaging our visitors in the world of contemporary science. One of the highest impact methods of achieving this is by facilitating the interactions between STEM professionals and Thinktank visitors and there are a variety of ways in which this can happen.

Thinktank is also committed to the overall increase in engagement between local scientists and the many diverse groups of people and communities within the West Midlands and as such will also support and facilitate local scientists in public engagement activities that do not necessarily take place in or around Thinktank.

We are often approached by local STEM professionals, who are seeking advice, guidance and support for their public engagement and this section aims to describe some of the options that are available.

Training

There are a variety of training opportunities that Thinktank can offer STEM professionals. We have an ongoing relationship with the School of Psychology and PSIBS at the University of Birmingham in which we deliver 'text writing training' and then link this to an activity that puts the training into practise.

We can also deliver a more generic PE training and also bespoke training that specifically meets your needs. From one project that we delivered as part of the National HESTEM programme, a modular online PE training resource was developed that is now available as a downloadable PowerPoint slideshow from www.thinktank.ac/volunteering

In addition to specific training, we at Thinktank just love talking about Public Engagement and the many wonderful (and some not so wonderful) activities that we have had and are happy to come and talk to groups about specific elements of Public Engagement.

Although we would not necessarily call ourselves 'evaluation experts', we do carry out a lot of evaluation, to measure the impact of the learning that we try to achieve. We will gladly share our experiences with other people and advise as best we can on how to measure specific objectives and outcomes that you might have. This is a discussion that is best had at the start of any project, since evaluation and development are very tightly linked. If you know that you need to evaluate an activity, it is always a good idea to be thinking about this from the start – not only is it easier, but tends to give more meaningful results as well.

The 'old school' approach to public engagement was to deliver lectures to the public. These can be great and are still popular under some circumstances, but are also limited in what they actually deliver. The main reason for this is that they generally involve a very one-way learning experience. In other words, the speaker tells the audience something. If there is a Q&A session afterwards, there is the potential for feedback from the audience, but more often than not, this simply extends the one-way transmission in a new direction. As mentioned, this can be great and there are come clear benefits to this model, but there are lots of other 'learning models' and many of this have very different learning outcomes.

One of the relatively recent incarnations of this has been the process of dialogue. According to the Association of Science and Discovery Centres, dialogue is 'a conversation between

two parties where both parties are listening to, and learning from one another'. As part of the national Dialogue Academy project, Thinktank developed an 'evaluation of dialogue' module and can assist in any processes that involve the evaluation of dialogue.

Working in a busy science museum, the Gallery Enablers and Visitor Services Assistants at Thinktank are very experienced in working with a general public. Everything that they do involves excellent customer service and communication skills. A lot of this is learned through experience within an organisation that has a very strong visitor satisfaction philosophy, but it is also underpinned by a thorough and rigorous training programme. Indeed, in 2010, we were finalists in the National Training Awards for our programme. We now offer a stripped down version of this, and other training, as well as on-the-floor experience through our work experience and internship programmes. For more information on these, please visit www.thinktank.ac/jobs.

Written media

Whilst we believe that all STEM professionals should be doing some form of public engagement, we also understand that not everyone is suited for face to face interactions. However, we do believe that within the wide variety of public engagement opportunities, there is something for everyone. Science writing is one way of engaging with the public that can very easily be overlooked. Writing a blog is one way that lots of people might start down this route, but Thinktank can offer even easier ways to start writing. In particular, for several years we have run afternoon sessions for groups of scientists that combine text writing training with the opportunity to put it into practise by creating museum content for our visitors.

News Releases is a kiosk based exhibit that features a series of 'stories' depicted by a title and picture. The visitor chooses the story they want to read and are then presented with up to three short pages of text that tell the story. Each page has approx 30 words of text available, and as Pascal once suggested, it is difficult to write concisely! The beauty of News Releases is that it is very straightforward and has a clear outcome – a story on a screen. In theory, we could hear a science story in the news one morning and have it part of museum content by opening time. For this reason, it is a really nice introduction to writing about science.

Hot Topics are a slightly different format. Initially written as a series of two sided A4 resource sheets that were found in the Talking Point space within the Futures gallery, they then became an online resource as well. Each Hot Topic is on a different area of science and includes a basic introduction and some factual background on one side and a description of some of the issues associated with the subject on the reverse side. The resource is considered to be an overall introduction to a specific topic such that the reader can then engage with that topic in the future and be in a position to make their own decisions rather than trusting any bias being presented. As a written resource, Hot Topic sheets can very easily be credited to the individual that wrote them. The entire range of current Hot Topic sheets can be found at www.thinktank.ac/public_consultation and a selection are found as hard copies within Talking Point.

Send it Home is a digital equivalent of the Hot Topic sheet. The visitor selects a story by title and image and then Emails it to a chosen address. The principal is that the visitor is extending their learning experience by their own choice. The beauty of *Send it Home* is that the Emails are in an HTML format and can therefore include hyperlinks. When first installed Send it Home included a variety of Hot Topic-esque material but we then realised that it could be more powerful and we now use it to link to public consultations or to specific projects for local Universities. One of the most common of these is for those labs that recruit members of the public to take part in trials. On the one hand, this material needs to be written in the first place, but it also places local University work in the public arena. As an aside, we can also put these types of recruitment onto the Thinktank website.

Face to face interactions

Evening talks

The classic format for public engagement is an evening talk for adults. These still exist and there is a place for them in the modern public engagement environment, but they also have their drawbacks. A lecture essentially provides a one way transmission of information, but can do so to a large number of people. This can make evening talks appealing to scientists, because they can be perceived as being a good solution to the 'public engagement' need, but the problem that we often face with evening talks is that people generally don't want to come to them. There are many more meaningful ways for scientists to talk with public audiences, that unless there is a good reason to require a large lecture format, they are best avoided.

Cafe Scientifique

Cafes are informal pub based events that currently take place in the Gin Parlour room of the Jekyll and Hyde Pub in the city centre. The format is very straightforward. There is an invited speaker, almost always a local STEM professional, who, without any PowerPoint or presentation media, discusses their work with an audience of adults. The discussions tend to cover a variety of different areas, often linking with social issues, but at the same time, they give the speaker a real chance to share their passion and enthusiasm for their work with others. The lack of presentation media, often leads to the speakers describing the events as being 'liberating' and has on some occasions led to new research ideas and perspectives.

Meet the Scientist/ Expert

These are one of the most popular events for local STEM professionals to become involved with at Thinktank. More in depth information is available here: www.thinktank.ac/volunteering. Essentially, a group of scientists will prepare a series of activities and bring them into Thinktank over one of our busiest periods (e.g. half term) to share them with our visitors. The most important part of the process is determining what the scientists want/ need to get from the experience. Typically, over the course of a day, a group of scientists would engage with around 500 people and would almost certainly be exhausted by the end of the experience, but in a good way.

There are many different types of activity that can be done as part of a Meet the Scientist activity and we encourage the scientists to make their events as individual and unique as possible, based on the research that the group undertakes.

There are also many different outcomes that can come from a Meet the Scientist event and the more that these can be considered at the start, the more successful the event is likely to be. Some groups simply want to fulfil a requirement for public engagement, others want to recruit participants for clinical trials. Some want to test activities for future research projects, others want to test written marketing materials. All of these are perfectly valid reasons for doing public engagement and all of them can happen, but they will always be more successful if planned for in advance rather than attempting *ad hoc* on the day.

The pinnacle of public engagement in many people's opinion is to involve the 'public' directly in research and there are occasions in which this can and has happened. As with prototyping, there is probably only a small number of research groups that can actually take advantage of this, but for those people, who can and who do make the effort beforehand to plan for this, the results can be incredible. Memorable examples include an experimental psychologist using our interactive theatre and its voting system to generate around 300 data sets in one day by doing science shows, or the neuroscientists who used the Giant Screen Cinema to test optical illusions on someone with severely restricted vision.

Prototyping/ evaluation

As identified above, Thinktank can be an ideal location to test materials and the principals of consultation and participation are very important to us. Historically, researchers have come into the museum to consult on printed leaflets with the people that they are aimed at – and indeed have learnt some very important views and opinions. Equally some researchers work in areas that are very people focussed (e.g. psychology) and their experiments rely on participants. The lay visitors that come to Thinktank are the perfect audience to test out these experiments and make sure that they work before data collection begins.

Consultation/ grant application support

One of the most common services that we can offer is simply a friendly but critical ear. For grant applications that would benefit from an element of public engagement, we can offer suggestions and support to ensure that the application is as strong as it can be. Many of the suggestions will be along the lines of those throughout this document, but we are always open to new suggestions as well and indeed we welcome new and innovative ideas for engaging our many publics.

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Making the most of PE – demonstrating impact

In some respects, public engagement is very simple to do, but it is hard to do it really well. As with so many things in life, preparation is probably the most important element, but with public engagement, this includes preparing your own reasons for engaging in the first place. If you know why you are doing public engagement and what you want to get out of it, it becomes much easier to make that happen. Since the replacement of RAE with REF, the increase of the use of public engagement to demonstrate impact has been noticeable. If this is a reason for engaging with the public though, it can be made more meaningful by planning in some evaluation of the event or activity that you deliver. By taking some photographs, recording the number of people involved, planning activities that have tangible outcomes (e.g. opinion gathering), interviewing people or using questionnaires, you can genuinely create the evidence that you need to demonstrate the impact of not only your public engagement, but also your research in a wider context. It is not uncommon, for researcher to leave an activity telling us that their own attitudes and values around their own work have changed. If you can record this and demonstrate it somehow within impact statements, it will carry a significant amount or weight towards policy informing.

Other ways to engage with the public

Public engagement does not have to happen through science museums and science centres, there are a number of different ways in which you can engage with a variety of different audiences through alternative mechanisms.

Writing

There are a variety of media that allow individuals to write about STEM. From writing competitions to blogs, web pages to social media, it is easier than ever to get your thoughts out to wide variety of audiences. The web has become much more accessible to users now and it is easier than ever for people to create their own content and host it. This can include the written word, but also video content.

Festivals

There are many festivals of science around the country now. Some happen in the same place at the same time of year, whilst others move around the country each year. Whether through delivering workshops or simply by being a volunteer, there are many ways of getting great experience.

Public Engagement organisations

There are many organisations that exist to deliver or help others to deliver public engagement activities. The British Science Association has a central office that delivers events such as the British Science Festival, but also has regional branches run by volunteers. These regional branches are often looking for new volunteers and events. STEMnet is a network of STEM professionals who are supported in delivering public engagement predominantly through schools. As well as being a national organisation, there are regional branches again that offer local support, training and opportunities to meet other like minded people.

Masters Courses
For people wanting a qualification in public engagement, there are a variety of science communication Masters courses. As well as providing a thorough grounding in science communications theory and history, there are also placements and work experience that will serve career science communicators well.

Cafe Scientifique, Science Showoff, Bright Club and Famelab
There are numerous genres to communicate science that involve standing up in front of people. Whilst the classic lecture format still exists and many organisations and groups still promote these, there are many other ways of talking about science. From informal pub-based discussions to stand up comedy, the options are numerous and these less traditional formats tend to have a different set of outcomes for both the audience and the scientists. Thinktank happens to organise the Birmingham Café Scientifique, but many others around the country are run by volunteers.

University initiatives
Most universities are promoting public engagement as part of a wider strategic vision. As a result of this, many departments, faculties and colleges have outreach or widening participation teams. These people can help you to develop new ideas as well as support existing programmes such as open days.