

A Guide to Good Practice in Public Engagement with Physics

April 2011



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Foreword

As an official supporter of the research funders' [Concordat for Engaging the Public with Research](#), the Institute of Physics is committed to encouraging and supporting members, and others, in their efforts to engage the public with physics. The Concordat and the associated [Manifesto for Public Engagement](#) are designed to help embed public engagement with research in all universities and research institutions, and ensure that it is valued, recognised and supported.

The aim of this guide is to provide an overview of good practice in public engagement and to signpost other sources of help and support, making it easier for all physicists to get involved.

“Public engagement” is an umbrella term that can mean different things to different people. For the purposes of this guide it refers to any activity that takes physics to a non-scientific audience. It can include face-to-face activities such as giving talks in a school or chairing a debate at a science festival; online activities such as web-based experiments or blogging; taking part in deliberative dialogue projects; writing popular books; or working with journalists to get coverage of physics in the media. While the main focus of this guide is on face-to-face interaction with public audiences, the issues that it covers can also usefully be applied to other situations and activities.

Whether you're completely new to public engagement or have had some experience and want to become more involved, this guide is a summary of the processes involved in developing, delivering and evaluating an activity, or volunteering for events organised by others. It won't give you all the answers, but it should help you to ask the right questions and provide some direction on where you can find useful answers.

We hope that this guide will help you to capture people's imagination, highlight the relevance of physics to their everyday lives and make physics accessible to all.

Prof. Averil Macdonald

Chair, External Engagement Committee and chair, Physics Communicators Group
April 2011

“The aim of this guide is to provide an overview of good practice in public engagement.”

Introduction

Whether you're designing an activity to deliver yourself or organising an event for others to run, this guide will help you work through the steps for developing and delivering high quality and effective public engagement activities. The guide poses a series of questions that are helpful to consider at the very beginning of any public engagement project as well as highlighting many of the resources that are available.

This guide has been produced as part of the National HE STEM Programme, which seeks to transfer good practice across the STEM community, including public engagement activities. It is not intended to replace or repeat the contents of existing good practice guides, a list of which can be found in Appendix 1 (p15), but rather to consolidate the advice and support in one place.

The information has been collated by the Institute's Physics in Society team who are committed to supporting physicists who wish to engage and inspire people of all ages about physics. Our contact details can be found on p16 and we look forward to hearing from you.

Throughout the text the words that are highlighted in red are clickable links. A list of these links by page number is included in Appendix 5 (p23).

“This guide has been produced as part of the National HE STEM Programme.”

Caitlin Watson

Head of public engagement

The questions to ask yourself



What are you trying to achieve?

At the start of any public engagement project, you need to define its purpose – why are you doing it? Everything follows from this aim, including the audience, the nature of the activity and how you will evaluate it.

No single aim is better than any other, but you do need to be clear about what you want to achieve from the beginning. Don't try to be everything to everybody as audiences are very different – it is better to have several smaller events or activities than to try to find a one-size-fits-all solution that satisfies no one.

You may find it useful to use the [Public Engagement Triangle Conversational Tool](#) to help you articulate what you want to achieve and why. It is also worth looking at the [Collective Memory Database](#) or the National Co-ordinating Centre for Public Engagement's [Case Studies](#) to see if anyone has tried to achieve something similar, how they went about it and whether there are any lessons that you can apply.

Once you're clear about what you want to achieve, flesh out this aim with your objectives. Make sure that you keep your objectives focussed and make them measurable.

Who is your audience?

The audience should follow from your aim and you'll probably have an idea of who you want your activity to reach, but it's worth thinking about the nature of the audience in some depth. While it's tempting to say your audience is "the public", it is much easier to deliver a successful activity if you are more specific. For example, a show designed for A-level physics students is likely to be far too high level for a family audience.

In some cases, the audience will be determined by the venue or activity, so consider these alongside your thoughts about target audience. For example, if you're taking part in a university open day, your audience is likely to be prospective students and their families.

The questions to ask yourself

Example of an aim and related objectives

Aim: To engage local families with physics, highlighting the relevance to them of research into particle physics.	of atoms and sub-atomic particles, particle physics and particle accelerators before National Science and Engineering Week.	during National Science and Engineering Week.
Objectives: <ul style="list-style-type: none">• Design and test five new hands-on activities that explore the concepts	<ul style="list-style-type: none">• Reach an audience of 1000 local people in family groups by working in partnership with the local museum	<ul style="list-style-type: none">• Provide at least six postgraduate students with the training and support needed to participate in public engagement activities during National Science and Engineering Week.

It's also worth spending some time thinking about how you will get your chosen audience to turn up and take part. Are you making use of a pre-existing group (for example, visitors to a science centre) or are you relying on attracting people to something new? Are you targeting people who are already interested in physics or do you want to try and reach people who wouldn't normally choose to do a physics-based activity? What kind of publicity are you going to use? The host location may have considerable experience in publicity and marketing so make sure you talk to them.

What activity are you going to do?

The nature of the activity should follow from your aim and objectives as well as being informed by your audience. The box at the top of p5 contains some different types of activities that you might consider.

It's important to make sure that the activity is appropriate for the target audience. Remember that they might not know anything about your topic and they're unlikely to be as excited about it as you are. According to a semiotic analysis of physics commissioned by the Institute, some people are drawn to physics because of the possible challenges and the intellectual elitism, while others see it as an

Case study: Pre-school rockets

Adam Gibson's existing links with a local nursery school ensured that his activity was safe, suitable and fun for all involved.

Adam, a reader at UCL, used an IOP public engagement grant to develop a rocket-building workshop for 3–5-year-olds at his son's nursery. He delivered the workshop with the help of volunteers from his department whose presence on the day proved to be invaluable.

In planning the workshop, Adam took advantage of the nursery's existing programme of events aimed at encouraging dads to interact with their children and the support of an enthusiastic teacher. "It's really important to get a teacher on-board from the beginning. They're a big help



– they can talk to the head teacher on your behalf, help you deal with the safety and insurance requirements and even give some feedback on your proposed activities." So while the logistical details including the audience, venue, publicity and child safety were

managed by the nursery, Adam was able to focus on the activities.

To ensure that the activities were appropriate, Adam looked to his son. "My son was involved from the beginning. We went through the activities together and if he didn't like it, I didn't put it in. Once he was happy, we got some of the neighbours' kids to have a go as well to check that they really were right for the age group."

Results on the day showed that all of the pre-event planning was worth it. "The workshop had the largest attendance that the dads' group has ever had and our evaluation showed that we'd succeeded in enthusing the children about science as well as giving the parents the confidence to encourage that enthusiasm."

The questions to ask yourself

Examples of public engagement activities

There are lots of different types of activities that you can do including:

- Participating in a science festival;
- Working with a museum, gallery, science centre or cultural venue;
- Working with the public to inform policy;
- Presenting to the public (e.g. a public

lecture or talk);

- Involving the public as researchers (e.g. web-based experiments, focus groups);
- Engaging with young people to inspire them about research (e.g. talks or workshops in schools);
- Contributing to new media enabled

discussion forums (e.g. blogs, Twitter, podcasts);

- Volunteering as a STEM Ambassador to work with schools or after-school clubs;
- Writing a science column for your local paper.

abstraction that is not part of normal life. Think about how you're going to present the physics and find a "hook" that links your topic with the experiences and interests of your particular audience.

If you can, trial your activities with people from the target audience or ask for input from someone familiar with them (for example, parents, teachers or event organisers or, in a university, talk to your outreach office or external relations specialists). If you're planning an in-school activity then talking to a teacher is a must and they are likely to have some great tips for you.

Before making a final decision about your activity, it's worth thinking again about whether the approach you've chosen is the best one in order for you to achieve your aim. Also double-check whether your activity is inclusive – are you excluding people simply by the way that you're presenting your topic?

Where and when will you run your activity?

For many activities, the where and when will be something that you just have to work with. For example, for a university open day the venue is likely to be a lecture theatre or laboratory and the activity will have to take place on the open day.

However, if you do have the chance to decide your own venue and timing, it's important to consider whether or not a venue is suitable for your target audience. Are you reducing your potential audience by running the activity somewhere that is inaccessible or that is intimidating for your target audience? Can your target audience get there on time? The [RCUK's Dialogue with the public: practical guidelines](#) contains some in-depth evaluation of audience types and their habits.

Are you more comfortable behind the scenes?

Even if you're not the kind of person who wants to stand up in front of people, you can still be a key player in public engagement. Every activity needs someone to pull it all together and make sure everyone is in the right place at the right time. You can get your colleagues to help with delivery or even bring in a speaker or activity from outside your organisation.

Once you've found someone, give them a call and discuss what you're after. Do they sound like they know what they're talking about? Are they appropriate for your activity and your audience? Most presenters and facilitators are happy to provide you with references (and sometimes clips of them in

Examples of venues

Don't forget to think about your venue and the facilities that they provide:

- Schools – primary or secondary;

- University – research laboratories, lecture theatres;
- Local libraries, museums or galleries;
- Town halls or leisure centres;

- Public parks or city squares;
- Shopping centres;
- County shows;
- Online.

The questions to ask yourself

Do you know a good...?

There are a number of places that you can go to find the right presenter or workshop.

Sciencelive – an online directory of talks, presentations and workshops delivered by professional science and engineering communicators, and committed and experienced enthusiasts.

www.sciencelive.net

The STEM Directories – designed to help teachers find people and activities to support their science, technology,

engineering and maths teaching.

www.stemdirectories.org.uk/

Your Institute of Physics branch – the secretary of your local branch might be able to help you find other members who are already involved in public engagement.

www.iop.org/activity/branches/index

STEMNET – your local STEMNET

contract holder will be able to contact local STEM Ambassadors and workshop providers.

www.stemnet.org.uk

University contacts – the outreach or external relations team or the press office might be able to help you to find appropriate speakers or presenters.

Press or public relations team – your organisation's communications team might have some good contacts or know who to recommend within your organisation.

If you do enjoy being in front of a crowd, make sure that you're signed up with all of these places so that other people can find you.

action) if you need more information before making a decision.

Make sure everyone involved is very clear beforehand about what is to be delivered and who is providing what equipment. If possible, see the presentation or a run-through of the activity in advance. By making sure that you're absolutely happy with what is going to be presented, the risks of disappointment will be reduced. Always be sure to give the presenter some constructive feedback after the event.

Do you have to arrange it all yourself?

If you want to have a go at public engagement but don't want to organise your own activity, there are plenty of opportunities to join in activities that already exist.

Check with your local IOP branch and see if they've got any events coming up that you could get involved with, or join the Institute's **Physics Communicators Group** to hear about activities that they and the Physics in Society team are co-ordinating. If you sign up as a **STEM Ambassador** you'll get regular e-mails to tell you about upcoming activities. If you're based in a university, you can also have a chat with the outreach or external relations team and let them know that you're keen to get involved. Science festivals often need volunteers for a range of duties but make sure you're clear about what you're signing up for – it might just be handing out programmes.

Getting involved in an existing activity is a great way to try out some public engagement activities with minimal organisational input – someone else will have worked out the aims, objectives, audiences, venue and publicity. Often, even the activity will be sorted out for you, so you can focus on communicating with the participants. You may find that after joining in with someone else a few times that you're ready to run your own activity.

Did it work?

Many people groan when evaluation is mentioned but it's a good way to make sure you're on track with your activity and to find out whether you achieved what you set out to. Evaluation also enables you to learn from your experience and build on it next time.

From the beginning of your project you should be thinking about how you'll know whether you've been successful or not. Your evaluation should be commensurate with the activity. For example, if you're performing a show for primary school children you might ask a colleague to come along and provide you with feedback after the show, or ask for the teachers' views. If you're running a workshop for teenagers you may decide to have a graffiti wall for them to use throughout the session. If you're

The questions to ask yourself

running a number of activities as part of a larger project, you may decide to appoint an independent evaluator. The most important thing is to work out what information you need and the best way of collecting it.

Evaluation techniques

There are lots of different ways that you can assess whether or not you've achieved your aims. There are quantitative measures (for example, how many people took part in the activity or how many of your colleagues were involved) and there are qualitative assessments where you ask for a bit more information from your participants (usually questionnaires or interviews). Don't forget that self-reflection and learning are also an important part of the process – what would you do differently next time?

Appendix 2 (p17) contains a list of evaluation resources, including The Charities Evaluation Service booklet, *First steps in monitoring and evaluation*, which has some good tips on project planning and the self-evaluation process.

Reporting

There's no sense in writing a report for no reason, so it's useful to consider what you're going to do with the results of your evaluation. You might use it in a report for your funder, or use it to improve how you run the activity next time. What about sharing your results with your colleagues? Or publishing a short article in your university or company newsletter? One of the great things about evaluating your public engagement activity is that it gives everyone a chance to learn from each other. **Collective Memory** is a database where you can record brief details about your project, its successes and what you would change if you were to run it again.

Case study: Science festival event



Organising a new activity can be a satisfying yet lengthy process, as Julia Linke discovered.

Julia was a PhD student at the University of Cambridge when she took on the challenge of organising a science festival event to promote her group's cutting-edge research from scratch.

Co-ordinating the drop-in event at one of the university's laboratories proved a steep learning curve and far more demanding than she had expected. "Organising a project like this is great for developing your transferrable skills – organisational, budgeting, interpersonal and communication skills as well as time management and creativity. However, it can also take up a lot of time and I recommend that you don't take it on lightly."

Four pages of to-do lists helped

Julia keep track of the necessary preparations; from ordering T-shirts and finding keys for the lab out of hours, to printing labels for the activities and organising a clean-up crew after the event. These lists were invaluable when Julia repeated the event the following year and have since made it possible for someone else to take over the co-ordination role without Julia's experience and learning being lost.

Although it can take a lot of preparation to make an event run smoothly, Julia believes that the results are worth it. "It is very rewarding to kindle the curiosity of children with hands-on experiments. I love hearing their unconventional questions and funny remarks, and to see them go from shyly observing to excitedly doing some science is just amazing."

The questions to ask yourself

A few ways of collecting information for evaluation

- Count the number of participants – stickers can help with drop-in activities that have a lot of visitors (keep the empty sheets and count the blanks) or use a tally counter.
 - A graffiti board can help gather comments about the activity. Pin up a question or two to give some guidance on what you're after.
 - For a drop-in activity, try timing how long people interact with you, or note whether you have repeat visitors. This is best done by a designated observer.
 - Use voting buttons or a show of hands to assess attitudes during a talk or workshop (you might even be able to see a change if you ask questions at the start and near the end of the activity).
 - Very young participants can put a ball in a happy bucket or a sad bucket on their way out.
 - Get someone to subtly observe the participants during the activity and note down reactions and comments.
 - Have participants fill out a questionnaire at the end of the activity. See Appendix 2 (p17) for examples and more information about putting these together. Sometimes an incentive (a give-away or prize) can help get a good return rate but be aware that people often tell you what they think you want to hear.
 - Give out postcards that direct participants to an online questionnaire with prizes.
 - Include the evaluation as part of the activity, for example, during a workshop with young children, you might get them to draw something related to the topic.
- Use your imagination and don't be afraid to try something new – just remember to keep it linked with your aims.



Other important things to consider



Risk assessments

In its simplest form, a risk assessment is where you identify possible hazards and worst-case scenarios and then take action to minimise the chance of them happening. It's an essential part of planning any public engagement activity and is not just an administrative add-on – it can be a useful tool to ensure that you're targeting your activity to your audience and in many cases it can be a requirement of your insurance company.

Start by thinking about everything that you're going to be doing. Some people like to write a method statement to help identify potential risks. This is a short document explaining what you're going to do for the activity. It explains what equipment you're going to use and what the participants in the activity will do. This is also useful if you're going to be passing your risk assessment on to someone else (the venue, a science festival, a school, etc) because it lets them see exactly what you're going to do and how you're minimising possible incidents. It's worth checking the health and safety requirements of your venue – they might have a particular form that they'd like you to use. Otherwise, you can use a version of the one in Appendix 3 (p20) or go to the [Health & Safety Executive website](#) for more examples.

It's important to review your risk assessment every time you run the activity – it reminds you of the precautions that you need to take and provides an opportunity to add additional hazards or precautions as they come up. Make sure that everyone involved in the activity knows about the risks you've identified and what they should be doing to minimise them.

Many hazards can be avoided with common sense – make sure that there are no trip-hazards, supervise children if they're using scissors, warn people not to drop heavy things on their feet. For more specialised health and safety requirements, have a chat to your health and safety representative or look at the Health & Safety Executive website. If you're doing an activity in a school it might be worth asking your teacher contact to check what you're doing with the latest advice from [CLEAPSS](#).

Other important things to consider

Public liability insurance

If you're running your activity on behalf of your employer or another organisation, it's important to check whether or not you'll be covered by their public liability insurance. Most museums and science centres ask for visiting activities to be covered by their own insurance and will often ask to see a copy of the certificate. Your health and safety representative or company secretary is the best person to ask about this. If your organisation's public liability insurance doesn't cover your activity, STEMNET will cover you if you're a registered **STEM Ambassador** and you've notified them of the event beforehand. If you're running an event on behalf of the Institute, you will probably be covered by the Institute's insurance as long as you have done a full risk assessment, but please contact the Physics in Society team (**e-mail physics.society@iop.org**) to make sure that you are.

Safeguarding children and vulnerable adults

There is a lot of confusion and misinformation surrounding the requirements for the safeguarding of children and vulnerable adults, especially as to whether people taking part in public engagement activities need to be vetted. You should always check what your organisation's policy is as well as checking if your venue (e.g. school or science festival) has a policy.

Most policies will require people coming into contact with children and/or vulnerable adults on a regular basis to undergo some form of vetting. In England, Wales and Northern Ireland this will be an enhanced Criminal Records Bureau (CRB) check. In Scotland it will be a requirement to register with the Protecting Vulnerable Groups (PVG) scheme and in the Republic of Ireland it will be vetting through the Garda.

If there is any disparity between your organisation's policy and that of the venue, or you find that there aren't any policies in place, negotiate with all sides to ensure that a solution is found that suits everyone and meets the requirements of the legislation. See contacts in Appendix 4 (p22) if you need advice for a specific circumstance.

The Institute of Physics' Working with Children and Vulnerable Adults policy applies to everyone doing activities on behalf of the Institute. If you are running an activity you'll need to sign up as a **STEM Ambassador**, which provides you with an enhanced check or registration with the PVG scheme for free. If you're in the Republic of Ireland you'll need to complete a Garda personal data request. If you're simply taking part in an Institute activity we strongly encourage you to sign up as a STEM Ambassador or complete the Garda personal data request, but even without this you may still be able to take part in an activity as long as you are never left alone with children or vulnerable adults.

If you're in any doubt or want more information on the Institute of Physics' Working with Children and Vulnerable Adults policy please contact the Physics in Society team (**e-mail physics.society@iop.org**).

Where can I get more advice and support?



Whether you're new to public engagement or have been involved with it for years, sometimes you'll need a bit of help. There are many organisations, groups and people out there who can support your public engagement activities. The following lists are not exhaustive but are a good place to start – and if you can't find what you're after, contact the Physics in Society team (**e-mail physics.society@iop.org**).

Case study: Utilising your outreach officer

Pete Edwards offers guidance and support for members of his department who are interested in public engagement.

As Durham University's science and society officer, Pete spends a lot of time developing and delivering public engagement activities and it's something he's keen to share. "At the physics post-graduate welcoming parties I introduce myself, talk about the outreach work that we do in the department and encourage everyone to get involved."

Pete is also there to lend a helping hand when someone is after advice on how to get started, "I'm someone they can talk to about their ideas. I can help them clarify what they want to do

and how they might go about it. If they want to work with schools, I can put them in touch with a friendly teacher or guide them to an existing activity like Junior Café Sci. If they just want a taste of public engagement, they can take part in the activities that we run within the department or at the university." This hands-on approach has led to an increase in physics post-graduates taking part in outreach activities since Pete started in his role.

For anyone considering getting involved in public engagement activities, Pete's advice is simple: "Think about what you want to do, tap into experts and don't be put off by a setback or two. But most importantly, do it, it's great fun!"

Where can I get more advice and support?

Case study: Valuing your volunteers



Claire Sweetenham supported her volunteers with training, took their feedback seriously and reaped the rewards.

Claire, a PhD student at the University of Nottingham, used an IOP public engagement grant to run physics busking in a shopping centre during National Science and Engineering Week. Volunteers presented crowd-pleasing science demonstrations to an unsuspecting public, encouraging them to have a go themselves.

Although many different aspects had to come together to make the event work, finding enthusiastic volunteers was key to its success. “The biggest challenge was recruiting students and academics. I was asking them to volunteer in their spare time and many that I approached were wary of speaking to the general public about science.” To help allay these fears, Claire provided pre-event training

for all the volunteers. This included written instructions as well as a hands-on session to go through all of the activities and to practise different approaches and levels of explanation. In addition, debriefing sessions at the end of each day helped give the volunteers a sense of ownership of the activity by enabling them to suggest improvements as well as providing time for self-reflection and constructive feedback.

By making sure that her volunteers were confident and happy, Claire not only inspired the public with physics, but also inspired fellow academics with public engagement. “Everyone who took part felt that the event was a success. They found it to be a positive experience and much better than they had imagined. This event introduced a number of physics students to outreach and they are now enthusiastic about being involved in similar events.”

Training

There are lots of different training opportunities for those interested in public engagement with science.

- The Institute of Physics runs outreach workshops at various times and places throughout the year.
www.iop.org/outreachworkshops
- Research Councils UK have a variety of initiatives to help encourage researchers into public engagement.
www.rcuk.ac.uk/per/Pages/Researchers.aspx
- STEMNET offers training for STEM Ambassadors – contact your local STEM Ambassador contract holder and see what they have available.
www.stemnet.org.uk/
- Some universities offer public engagement or outreach training to post-graduate students. You can also check if there is a training group or staff development service at your university – they may be able to help find or arrange appropriate training courses.
- The National Co-ordinating Centre for Public Engagement (NCCPE) website has links to a variety of training opportunities to help you build public engagement skills.
www.publicengagement.ac.uk/how/training
- If you're planning on taking part in a science festival, contact the organisers to find out whether they run any training sessions. The British Council website has a linked list of UK science festivals.
www.britishcouncil.org/talkingscience-centres-festivals.htm

Where can I get more advice and support?

- If there is someone in your organisation or department who does a lot of public engagement work ask them if you can tag along to see what goes on. They might even be happy to work with you to develop your own activity. Or at least give you some pointers.
- Sometimes the best thing is just to get out and have a go. Work in pairs and you can give each other feedback after the activity. Or write yourself some notes after each activity. You'll be surprised at how self-reflection can help you focus on improving your presentation skills.

If you're organising an activity involving your colleagues or other volunteers, arrange some pre-activity training for them, even if it's just getting everyone together to discuss how things are going to run and what to expect. It's good to go through any hands-on activities with your team so that they know how everything works.

If you don't feel confident running the training yourself, get someone else to run it for you. The networks below are a good place to start to find someone who can help. Remember that you'll need to know what you're after from a training provider – for example, do you want general communication training or are you after tips for a specific type of audience?

Public engagement networks

- The Institute's Physics Communicators Group aims to raise the profile of physics through high-quality public engagement resources, events and activities.
www.iop.org/activity/groups/subject/physcom/index.html
- The Psci-com e-mail list is a forum for discussion of any matter relating to public communication of science and public engagement with science. Subscribers often share information, ask questions and discuss relevant topics.
www.jiscmail.ac.uk/lists/psci-com.html
- BIG-Chat is the e-mail list for the British Interactive Group and is a good place to find like-minded people and to get a helping hand. Many people subscribe to both BIG-Chat and Psci-com.
www.big.uk.com/Default.aspx?pagelid=749565
- Your local IOP branch or the national or regional officer for your area might be able to put you in touch with like-minded members.
www.iop.org/activity/branches/index.html
- Isotope (Informing Science Outreach and Public Engagement) is a member-driven website containing a variety of information, resources and links.
<http://isotope.open.ac.uk/>
- The British Science Association offers a range of opportunities and events that you can get involved with, either as a volunteer or as a participant.
www.britishecienceassociation.org/
- Some universities have outreach groups or societies for people interested in science communication and public engagement with science.

Funding

Although it's possible to put together high-quality public engagement with physics activities without any funding, they're often easier to do with some financial backing.

- IOP public engagement grant scheme – supports individuals and organisations running physics-based activities. See the website for information about the grant scheme, including deadlines, application forms, full guidelines and examples of previously funded projects.
www.iop.org/about/grants/outreach/page_38843.html
- The National Co-ordinating Centre for Public Engagement (NCCPE) website has links to a range of funding opportunities for public engagement.
www.publicengagement.ac.uk/how/funding

Where can I get more advice and support?

- The British Science Association offers advice for finding funding for National Science and Engineering Week activities.
www.britishsociety.org/web/NSEW/NSEWFunding/index.htm
- The Science and Technology Facilities Council (STFC) offers funding for projects in public engagement relating to STFC science.
www.stfc.ac.uk/Public+and+Schools/1342.aspx
- Holmes Hines memorial fund – provides small awards to support individuals and organisations running activities related to science and engineering for which public funds are not available.
www.epsrc.ac.uk/funding/grants/pe/Pages/holmeshines.aspx
- If you're putting something together for a science festival, it's worth asking the organisers for tips on potential sources of funding.
- If you're at a university, talk to the outreach office or external relations team as they may have, or know of, funding for projects like yours.
- Don't forget about commercial sponsorship. Once you have a clear idea of what you're trying to achieve, contact local companies to see if what you're doing fits with their corporate social responsibility policy. Even if a company can't provide cash, it might be able to supply goods or services in kind.



Appendix 1: Resources

Good practice guides

National Co-ordinating Centre for Public Engagement Toolkits

Online resources designed to help senior managers and staff of higher education institutions to embed public engagement. The resources draw on the work of the six beacons for public engagement and include useful tools, case studies and contacts.

www.publicengagement.ac.uk/how

The Engaging Researcher

This booklet provides an overview of public engagement for researchers, and is full of practical tips, inspiring researchers and activity ideas.

www.vitae.ac.uk/CMS/files/upload/The_engaging_researcher_2010.pdf

National Higher Education STEM Programme: Good Practice Guide

This report presents the learning from four projects funded by The Higher Education Funding Council for England – Stimulating Physics, Chemistry for our Future, The London Engineering Project and More Maths Grads.

www.hestem.ac.uk/LinkClick.aspx?fileticket=G2HrMgmJBG!%3d&tabid=153

Partnerships for Public Engagement Good Practice Guide

Commissioned by the EPSRC, this guide contains valuable hints for anyone developing projects aimed at engaging the public with science.

www.epsrc.ac.uk/funding/grants/pe/ppe/Pages/goodpractice.aspx

Dialogue with the Public: Practical Guidelines

This guide from Research Councils UK is intended primarily for those relatively new to communicating science or who are making the first steps towards dialogue style activities.

www.rcuk.ac.uk/per/Pages/DialoguePublic.aspx

Additional resources

Research Councils UK – Public Engagement with Research

A collection of resources pulled together under four headings: Schools and Young People, Researchers, Public Attitudes and Values, and Festivals and Exhibitions.

www.rcuk.ac.uk/per/Pages/Home.aspx

Collective Memory

A database of evaluations for a diverse range of public engagement activities. Explore the database to learn about past successes, find useful tips for planning events and types of evaluation strategy and then add details of your own projects and share your learning.

www.britishtscienceassociation.org/web/ScienceinSociety/CollectiveMemory/

Science Museum – Sharing expertise

A resource toolkit designed for museums and science centres containing expert tips and practical advice that can often be applied to any public engagement with science activity.

www.sciencemuseum.org.uk/about_us/about_the_museum/sharing_expertise.aspx

Latitude Sciences – Handbook: Organize a Project for Public Understanding of Science

A guidebook translated from French that contains a variety of ideas for public engagement with science activities along with tips on how to run a successful project.

www.latitudesciences.ird.fr/outils/guide/ird_handbook_project_public_understanding_sc.pdf

Appendix 1: Resources

Going Public: An Introduction to Communicating Science, Engineering and Technology

This guide is aimed at practising scientists and researchers and covers working with the media, visiting schools and giving public lectures.

www.bis.gov.uk/files/file14581.pdf

Institute of Physics – Public Engagement

The Institute's Physics in Society team have put together a variety of resources to help you run your own activities.

www.iop.org/activity/outreach/

Physics To Go videos

A collection of physics tricks that lend themselves to drop-in or busking-style activities.

www.physics.org/article-interact.asp?id=59

Do Try This At Home

Simple, fun experiments designed to be done at home, with a new one added every month. Some of the experiments are good for workshops and some for drop-in or busking-style activities.

www.physics.org/marvinandmilo.asp

Physicists and Primary Schools project (PIPS)

Information for physicists who want to enthuse young children with the enjoyment and excitement of physics. The downloadable material covers a number of topics that are suitable for use when visiting primary schools.

www.iop.org/activity/outreach/resources/pips/index.html

Contact the Physics in Society team:

E-mail physics.society@iop.org

Tel 020 7470 4800

Institute of Physics, 76 Portland Place, London W1B 1NT.

Appendix 2: Evaluation

References

First Steps in Monitoring and Evaluation

Put together by the Charities Evaluation Services (CES), this booklet offers a practical, five-step approach to evaluating your own project using the resources available to you.

www.ces-vol.org.uk/index.cfm?format=746

Evaluation: Practical Guidelines

This booklet was designed for project managers in public engagement with science to help them evaluate individual projects, regardless of their experience of evaluation.

www.rcuk.ac.uk/Publications/policy/Pages/Evaluation.aspx

Museums, Libraries and Archives – Generic Learning Outcomes

This website contains an introduction to generic learning outcomes and links to additional resources including a checklist and hints for recording and analysing data.

www.inspiringlearningforall.gov.uk/toolstemplates/genericlearning/index.html

Charities Evaluation Services – free downloads

A further reading list of evaluation resources. These may be useful for extending or expanding your practice of evaluation.

www.ces-vol.org.uk/index.cfm?pg=112

Many of the good practice guides in Appendix 1 (p15) also contain information about evaluation and the evaluation process.

Questionnaires

Included below are examples of questionnaires that the Institute's Physics in Society team have used for physics engagement activities. These are based on generic learning outcomes and are geared towards physics-based activities. Don't just slavishly copy them, but modify them so that you're asking for information that matters to you.

Annex 3 of the EPSRC Partnerships for Public Awareness Good Practice Guide also contains helpful information on designing evaluation questionnaires.

www.epsrc.ac.uk/funding/grants/pe/ppe/Pages/goodpractice.aspx

Effective questionnaires for all

This document contains handy hints for designing questionnaires.

www.danacentre.org.uk/documents/pdf/questionnaire_recipe_book.pdf

Appendix 2: Evaluation

Sample questionnaire for evaluating outreach events/activities

Adults

Your age:

Male

Female

	Strongly agree	Agree	Disagree	Strongly disagree
I have developed an increased interest in something I knew little about before	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have made new connections between physics and the world around me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel more positive about physics now than before I came here	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I will continue to talk/think about the physics in this activity/event again	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
This activity has made me want to find out more	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

We were/I was:

Surprised by _____

Most interested by _____

Inspired by _____

Disappointed by _____

Bored by _____

Most enthusiastic about _____

How could this event have been improved?

Thank you for coming and for filling in this sheet!

Appendix 2: Evaluation

Children

How old are you?

Was (the name of the activity, e.g. the Physics of the Circus show)



Very Good



Good



OK



Bad

What did you like best?

What did you like least?

Did you find out anything new?

Did anything surprise you?

Did it make you want to find out more about science/physics?

Appendix 3: Risk assessments

Five steps to risk assessment

This online leaflet from the Health & Safety Executive aims to help you assess health and safety risks in the workplace. It offers a step-by-step process that is instructive and easy to follow.

www.hse.gov.uk/pubns/indg163.pdf

The risk assessment below is an example that you can use as a basis for your own.

Sample risk assessment: physics in the field – Garden Festival

Risk Assessment For	Assessment Undertaken	Assessment Review
Company Name: Institute of Physics Company Address: 76 Portland Place, London Postcode W1B 1NT	(date) Thursday 13 May 2010 Signed <i>Print it out, sign and date your risk assessment once you're happy with it. Remember to include all tricks that you will be doing at the event.</i> Date	Date Signed 15/5/2010 16/5/2010 <i>Review the risks and sign this form each day after adding any new volunteers to the list on the last page. Remember to make any notes and add any new hazards as you go – it's a good idea to leave extra space for these</i>

Step 1	Step 2	Step 3
List significant hazards here:	List groups of people who are at risk from the significant hazards that you have identified:	List existing controls or note where the information may be found. List risks that are not adequately controlled and the action needed:
<i>Fill this out for each trick that you are planning on running at your event – include who will be running the trick, staff or visitors</i>	<i>Usually</i> 1. Festival visitors 2. Project volunteers <i>but consider other people who may be at risk</i>	<i>What are you doing to control the risk? Is it providing information for visitors? Make sure you let all of your volunteers know all of the hazard controls before the day begins.</i>
Physics in the Field stand Trip hazard Fall hazard	1. Festival visitors 2. Project volunteers	1. All boxes and equipment safely stowed away under the tables. 2. Flags assembled correctly and placed in an appropriate place.

Appendix 3: Risk assessments

<p>Alka-Seltzer rockets – the IOP team will do this trick. On the few occasions where a visitor does this trick they will be very closely supervised.</p> <p>Choke hazard from film canisters and lids Alka-Seltzer canister hits visitors Alka-Seltzer gets in eyes</p>	<ol style="list-style-type: none"> 1. Festival visitors 2. Project volunteers 	<ol style="list-style-type: none"> 1. All film canisters and lids picked up after “firing”. 2. IOP team to ensure that visitors do not step over the ‘launch pad’ and for everyone to stand back while firing. 3. Alka-Seltzer rockets will not be fired when it is very crowded to minimise risk of the film canisters hitting a visitor. 4. Alka-Seltzer does not cause permanent eye damage, but if it does get in the eye then medical attention will be sought. 5. Children are not allowed to handle the Alka-Seltzer. Team members are reminded to wash their hands after doing this trick.
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Additional information:

- There will be a team of six performing the tricks, two members of Institute of Physics (IOP) staff and up to four volunteers. Number of children doing the tricks will vary throughout the day, but we do not expect the child to adult ratio to exceed 4:1.
- The two members of staff from the IOP both have an enhanced CRB check. Children and vulnerable adults will never be left alone with any of the volunteers, and there will always be an IOP member of staff present throughout the day. The following is a list of volunteers and identifies who is a STEM Ambassador.
- The IOP has public liability up to £20 000 000. A copy is available on request.

Date	Volunteer name		STEM Ambassador ID card number	STEM Ambassador ID card expiry date	
Saturday 26 June	Dayna	Mason	IOP Staff	-	Team Leader
	Elinor	Edwards	12345678	1/1/13	

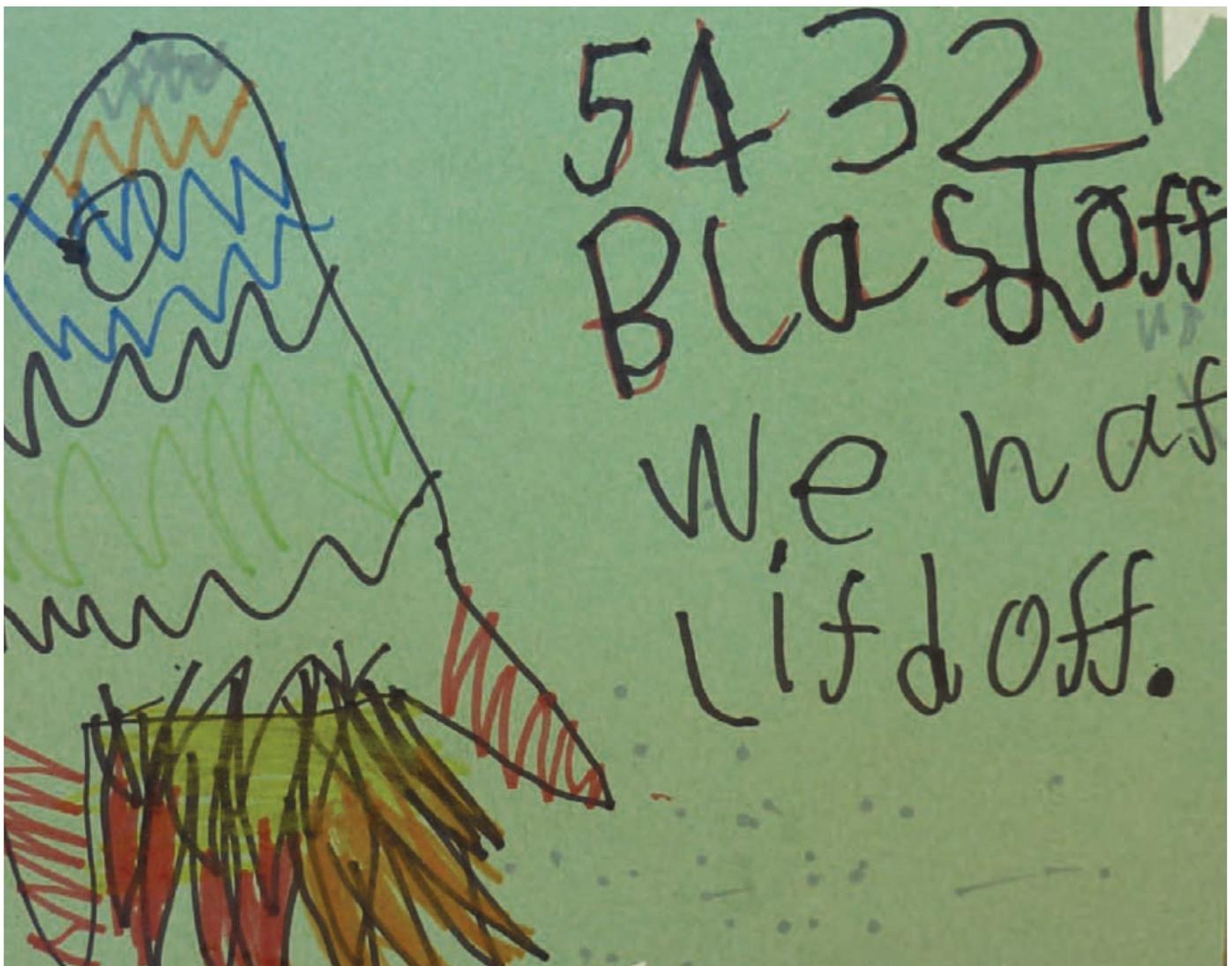
Appendix 4: Safeguarding children and vulnerable adults

The Institute of Physics' Working with Children and Vulnerable Adults policy can be obtained from the Physics in Society team (**e-mail physics.society@iop.org**) and is also available for all members in the Knowledge section of MyIOP. For any queries relating to this policy and its implementation please contact the Physics in Society team.

For further information on relevant legislation in England, Wales and Northern Ireland, contact the Independent Safeguarding Authority (ISA), **www.isa.gov.uk**, tel 0300 123 1111.

For further information on relevant legislation and the PVG scheme in Scotland, see **www.scotland.gov.uk/Topics/People/Young-People/children-families/pvglegislation**.

For further information on relevant legislation in the Republic of Ireland contact the Garda Central Vetting Unit, **www.garda.ie/Controller.aspx?Page=66**, tel Lo-Call 1890 488 488/00353.



Appendix 5: Links within the text

Throughout the text the words that are highlighted in red are clickable links. These links are:

Page 1

Concordat for Engaging the Public with Research

www.rcuk.ac.uk/per/Pages/Concordat.aspx

Manifesto for Public Engagement

www.publicengagement.ac.uk/why-does-it-matter/manifesto

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Public Engagement Triangle Conversational Tool

www.britishtscienceassociation.org/web/ScienceinSociety/scienceforall/ConversationalTool.htm

Collective Memory Database

www.britishtscienceassociation.org/web/ScienceinSociety/CollectiveMemory/

Case Studies

www.publicengagement.ac.uk/how/case-studies

Page 5

RCUK's Dialogue with the public: practical guidelines

www.rcuk.ac.uk/per/Pages/DialoguePublic.aspx

Page 6

Physics Communicators Group

www.iop.org/activity/groups/subject/physcom/index.html

STEM Ambassador

STEM Ambassadors are people from science, technology, engineering and maths (STEM) backgrounds who volunteer as inspiring role models for young people. All STEM Ambassadors receive training, an enhanced CRB check and registration with STEMNET.

www.stemnet.org.uk/content/ambassadors

Page 7

First steps in monitoring and evaluation

www.ces-vol.org.uk/index.cfm?format=746

Collective Memory

www.britishtscienceassociation.org/web/ScienceinSociety/CollectiveMemory/

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Health & Safety Executive website

www.hse.gov.uk/contact/faqs/riskassess.htm

CLEAPPS

www.cleapps.org.uk

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STEM Ambassador

www.stemnet.org.uk/content/ambassadors

The Institute of Physics is a scientific charity devoted to increasing the practice, understanding and application of physics. It has a worldwide membership of more than 40 000 and is a leading communicator of physics-related science to all audiences, from specialists through to government and the general public. Its publishing company, IOP Publishing, is a world leader in scientific publishing and the electronic dissemination of physics.

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