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Evaluating success: how to find out what worked (and what didn't)

1 WHY EVALUATE?

The question: '*So did it work?*' can be daunting for both new and experienced science communicators. The answer lies through effective evaluation, which can be one of the most interesting aspects of the engagement process. Kolb (1984) describes a cycle of conceptualisation, experiment, experience and reflection as crucial to the learning process, as recognised in Figure 26.1.

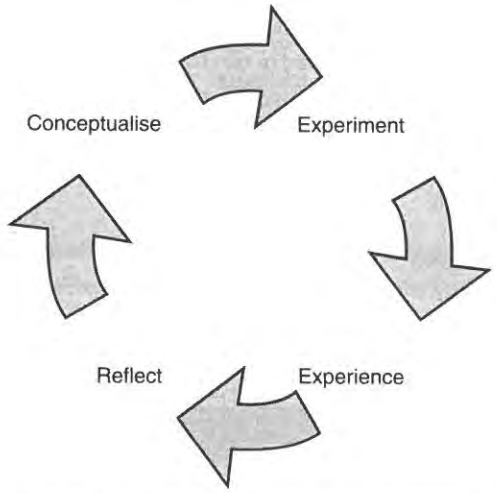

Figure 26.1 Kolb's cycle of experiential learning (Kolb, 1984).

Evaluators often talk about their work being used to 'prove' or 'improve' activities. Essentially evaluation can be used to improve an activity

Successful Science Communication, ed. D. J. Bennett and R. C. Jennings. Published by Cambridge University Press.

or programme by identifying and addressing limitations, or can look at an activity to arrive at a judgement of its success or worth. These findings are useful to check if your activity is achieving what it set out to, as well as in providing evidence for those interested in supporting your work such as funders.

This chapter will provide everything you need to get started in evaluation.

2 EVALUATION: DEFINITIONS AND TYPES

What is evaluation?

The UK Evaluation Society (2010) defines evaluation as:

> *An in-depth study which takes place at a discrete point in time, and in which recognised research procedures are used in a systematic and analytically defensible fashion to form a judgement on the value of an intervention.*

From this definition it is clear that evaluation is a form of social research. In fact approaching evaluation in a similar way to a scientific research study is often useful, although the methods are related to the social rather than natural sciences.

Evaluation is important in any area of activity where issues of effectiveness and impact are to be considered (Rossi and Freeman, 1989). This, of course, means that evaluations are conducted in a wide range of fields beyond science communication and there is much to learn from others' approaches.

Types of evaluation

In order to think about the different types of evaluation, it is first useful to model the system we wish to evaluate. Figure 26.2 provides a useful summary.

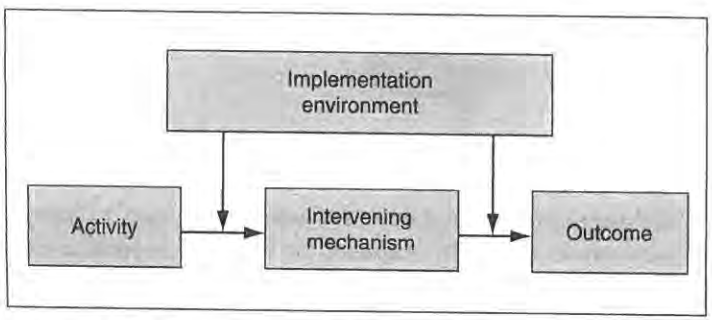

Figure 26.2 Summary of a typical evaluation system (adapted from Chen, 1990).

This evaluation system has the following elements:

- The **activity** (e.g. book, festival, website) that produces the change.
- An **intervening mechanism** that relates the activity to the outcome and can be explored in evaluations with a view to identifying causal factors. This can provide information on the reasons behind success or failure – far more valuable than simply reporting whether or not success was achieved.
- The intended and unintended **outcomes** of the activity.
- The **implementation environment** for the activity, which also affects the outcome. This could be something simple like a rainy day limiting festival attendance, or something much more complex like the cultural attitudes that participants bring to an activity and how they affect the outcomes.

Evaluations can focus on each of the individual elements above. In addition, **impact evaluations** aim to understand the impact of the activity on the outcome, and **generalising evaluations** provide information on how evaluation results for one activity or programme can be generalised to apply to future systems.

Despite the wide range of literature dealing with evaluation, science communication practitioners tend to use a much simpler way to distinguish evaluations: as either formative or summative. A single evaluation may contain both formative and summative elements.

Formative evaluation provides continuous feedback so that a project can be improved during the course of delivery. It's the best way to approach the evaluation of a new or innovative activity. It can also include some elements of **pre-research** with the target audience to identify needs or interests while the activity is in development.

Summative evaluation is usually conducted at the end of a project or activity, in order to 'sum up' its effectiveness. This type of evaluation usually focuses on impact, but information on delivery can also be collected. While summative evaluations are usually conducted too late to inform the project during its delivery, they provide useful lessons and good practice for future projects.

The best way to learn about evaluation is to apply it to a real activity or project. Evaluation is fairly straightforward and the remainder of this chapter will guide you through developing a meaningful

approach to evaluating your science communication activities. Frequently, project managers find that thinking about how a project will be evaluated stimulates deeper reflection on the project goals and approach, so this is also a useful project management tool.

3 WHAT DOES SUCCESS LOOK LIKE?

Evaluation is about gauging success, so the first step is to decide what success looks like. Be as clear as you can about what you want to do, how you will go about it, who you want to involve and why. Even if your activity is something simple like a public talk, taking the time to write down a few objectives is invaluable.

Project managers talk about writing **SMART** objectives that are Specific, Measurable, Achievable, Relevant and Time-bound. With each objective ask yourself how easy it will be at the end of the activity to test whether it has been met. You may find that some are easier to test than others; it is acceptable to have a mix as long as they are not all impossible to test.

Outputs, outcomes and impacts for your audiences

Having decided what you intend to deliver, think about what your audience will get out of it. The terms outputs, outcomes and impacts are often interchanged, but to evaluators they have clear and differentiated meanings. The following definitions are adapted from Grant and Jenkins (2009).

Outputs are all the products and services that your activity or project will deliver. They are easy to count, but just measuring outputs tells you nothing about the value of a project. Examples of outputs include: numbers of visitors, web pages, events, resources, publications.

Outcomes are the changes or effects that occur *as a result of the outputs*. Outcomes can be short-term, e.g. visitors learn more about recycling; or longer-term, e.g. visitors change their behaviour to recycle more waste.

Impacts are lasting, long-term changes that the outcomes contribute to. However there are likely to be other factors that support or limit the extent to which these types of changes occur. Following the previous examples about recycling, an impact could be that the percentage of waste that is recycled in a particular city increases. Linking this impact to the project in question is problematic – evaluators call this challenge 'attribution' and it tends to become more difficult over time and as the number of possibly contributing factors increases.

It is important to be realistic about what we can evaluate. It is generally acceptable to focus on evaluating outputs and outcomes for science communication projects. Evaluation of impacts can be covered by longitudinal research over a period of time or broader social science research studies.

The Museums, Libraries and Archives Council (2008) has created a framework called *Inspiring Learning For All* that identifies sets of outcomes for museum projects. They are certainly not the only outcomes that may emerge from science communication activities, but they are a useful starting point. The Generic Learning Outcomes (GLOs) summarised in Figure 26.3 are especially helpful.

Figure 26.3 Summary of Generic Learning Outcomes (GLOs).

It can be useful to draw a table to help think about outcomes. Perhaps use the different audiences as column headings and have different GLOs in the rows, but remember not everyone will achieve all the outcomes (Table 26.1). During this exercise, ask yourself what you hope someone might tell a friend about the activity, or what they might be thinking as they leave.

Note that it is valuable to consider both internal and external audiences for your evaluation.

Mapping outcomes for your project

Some very valuable contributions to the field of evaluation have come from the international development sector. Here, programmes of work are directed towards creating social change in various communities and

Table 26.1. *The different Generic Learning Outcomes (GLOs) for different audiences*

Outcome – GLOs	School kids	Apprentices – explainers	Me – the activity leader
Experiences – enjoyment, creativity, inspiration	Fun Interesting	Fun Interesting Worthwhile	Fun Interesting Rewarding
Knowledge and understanding	About what a job in science is like		
Skills	Lab skills Teamwork Communication	Teamwork Communication Organisation	Teamwork Communication Organisation
Attitudes and values	Science is more interesting than I thought; science could be for me	More confident about public engagement	
Behaviour	More attentive in science lessons back at school?		
Anything else	A look inside the facility so it's not just 'that building on the hill'		Some links with local schools for other projects

it is not difficult to see how science communication activities also seek to create social change, albeit in a different way.

If your project is more complex than a one-off activity, or if you are looking to evaluate a series of activities (outreach activities across a university department for example) then some of these approaches may be valuable. They aim to draw maps of intended outcomes from activities and explore assumptions about how these outcomes might be affected by the implementation environment. Defining what successful outcomes are for a project is half the battle when it comes to measuring success.

Two approaches worth looking at here are **theory of change** and **outcome mapping**. They both use discussions, usually facilitated by an experienced moderator, to develop a rich understanding of the social changes that activities and projects aim to make. Interestingly, they

take a more qualitative approach than many science communication evaluations, perhaps reflecting the backgrounds of practitioners working in this field. There is much material available online for both approaches; links are provided in the references.

Whatever approach is taken to identifying outcomes and defining success, once some intended outcomes have been identified it is time to think about how progress towards them will be measured.

4 EVALUATION QUESTIONS

Just as any scientific study has research questions it is useful to define evaluation questions based on your intended outcomes. Four or five evaluation questions are usually sufficient, as they should be relatively high level. Think of them as the questions you would ask someone else to answer if they were evaluating the project for you. Some examples from a hypothetical engineering project (developed by Grant and Paterson, 2009) are given in Table 26.2.

Table 26.2. Evaluation questions: *the questions you want your evaluation to address*

- What was the outcome of the project on engineers' knowledge of and attitudes towards public engagement?
- Did the impact differ for engineers at different stages of their careers, or for those with different levels of prior experience in public engagement? What other factors affected differences in impacts?
- What are the areas in which engineers needed the greatest amount of support to develop their activities?
- Did engaging in the activities change science festival visitors' perceptions of engineering? In what way?
- How useful was the DVD in sharing the learning from the project with others?

Next you will consider the research methods that can be used to evaluate the activity. The level of thinking that needs to happen before evaluation materials are designed is significant and this is crucial to ensuring that the evaluation is robust and its findings meaningful.

5 'MEASURING' SUCCESS

Quantitative and qualitative approaches

The two main approaches to answering evaluation questions are qualitative and quantitative.

Qualitative For evaluation questions that ask 'what', 'how' or 'why', qualitative methods provide a deep understanding of the ways in which your activity has had an impact on its participants. This

approach is ideal if you are unsure of what outcome your activity will have, or if it aims to have a strong impact on a small number of participants. Often used in formative evaluations.

Quantitative For evaluation questions that ask 'how much' or 'how many', quantitative methods provide numbers and statistics to quantify participants' opinions. These methods work best if you have a good idea of the expected outcome or outcomes of your activity, if it or they can be easily counted or measured and if you are working with large numbers of participants. Often used in summative evaluations.

Many evaluation plans will contain both quantitative and qualitative elements **(mixed method)**. For example, a new project may use qualitative methods at the start to find out what outcomes are emerging from activities. Later, quantitative methods may be used to measure the strength of the outcome, or what proportion of participants experience the different outcomes.

Figure 26.4 will help you think about which approach best suits your particular activity or project.

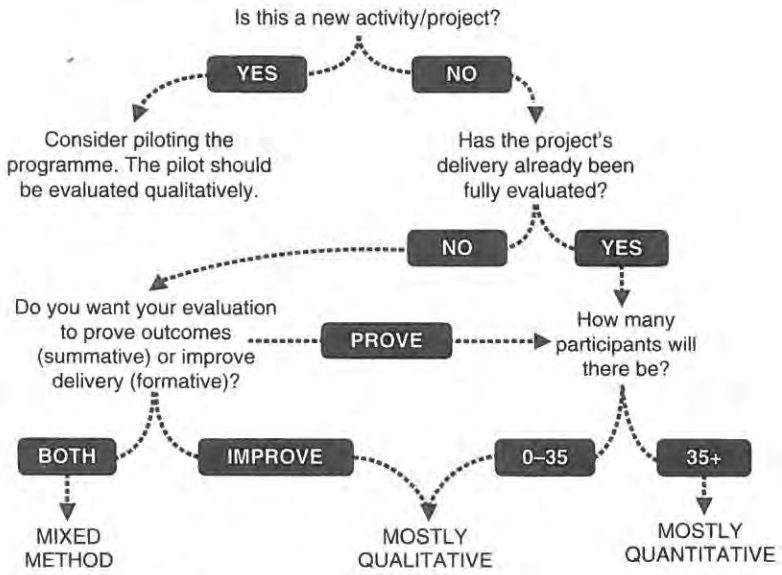

Figure 26.4 Flowchart for deciding on a qualitative, quantitative or mixed approach.

Which instrument?

There are many evaluation instruments to choose from, but the most popular are observations, questionnaires and individual or group interviews. Unfortunately no method is perfect, but an overview of the main methods including their strengths and weaknesses is provided in Table 26.3.

Table 26.3. *Overview of the main methods of evaluation*

Method	Advantages	Disadvantages
Observation	Suitable for collecting data related to behaviour	Subjects may change their behaviour if they are aware they are being observed
	Works well when subjects are involved in an interaction and unable to provide objective opinions	Potential for observer bias or difference in interpretation between observers
		Difficult to observe and record simultaneously
Questionnaire	Less expensive than interviewing Convenient Greater anonymity Can be distributed in a number of ways	Must be well designed Inappropriate for use with some groups, e.g. young children Self-selecting bias Not possible to clarify or explain questions Not enjoyable for participants
Interview	Appropriate for complex situations as collection of in-depth information is possible Responses can be probed further, questions can be explained	Potential for interviewer bias Requires skill on the part of the interviewer Time-consuming and expensive
Focus group	Very rich source of data Allows group interactions to be observed as well as opinions gathered	Requires skill on the part of the interviewer as group dynamic is crucial to collecting useful data

There are a large number of textbooks on the market that specialise in survey and interview design. Some are recommended in the **Key resources** at the end of this chapter. The next sections give a brief overview of questionnaire and interview design.

Questionnaire design

The key to effective questionnaire design is knowing exactly what you want to find out. Base your questionnaire on your evaluation questions and the outcomes you identified earlier. The **purpose** and **structure** of your questionnaire are important, as is the **wording** of the questions.

Purpose The questionnaire should always start with a brief sentence or two explaining the purpose of the questionnaire. A questionnaire is only as good as the questions it contains so ask yourself what you will do with the information each question yields. If you are unsure of the answer, consider removing the question. The aim is to end up with the smallest number of questions that can be answered quickly, but in a questionnaire that still provides the important information for your evaluation. Keeping it brief will encourage more people to answer your questionnaire and will encourage them to do so thoughtfully. The commonest 'mistake' is to keep on adding questions that it would be 'nice to know' without thinking whether they are really necessary.

Structure Your questionnaire should have a clear structure and questions dealing with similar aspects of the activity should be grouped together. Try and start with questions that participants will find easier to answer, such as why they came to the event or what their experience was like. This will ease your respondent into some potentially more probing questions about outcomes for them later.

It is often a good idea to ask personal information such as the respondent's age and ethnicity at the end of the questionnaire as these types of questions can put people off at the start. However, this information is important and if the questionnaire is too long respondents may not have the time to complete it.

Also, think about whether you will use closed form (multiple choice) or open form (where the respondent writes their response) items. Essentially, open-form items can tell you what the impacts of the programme are, while closed-form items will tell you how big each impact is, or how many people experienced it. If badly designed, closed-form items can skew data by not representing respondents' true range of opinions. This can also be frustrating for those completing the questionnaire, so closed-form items should only be used when you have a clear idea of what the potential responses will be. Open-form items, on the other hand, allow respondents complete freedom to report any opinions or impacts. However, using open form means that you have to develop a system for coding the responses and it will take much longer to enter the data into a spreadsheet and make sense of it in your report.

Wording Appropriate wording of questionnaire items is important in order to minimise bias in the questionnaire, i.e. leading people to answer one way or another. Here are a few points to guide you:

- Make sure materials are balanced, e.g. offer space for respondents to give both positive and negative feedback.
- Question wording should be non-leading, e.g. *'Please tell us whether or not the event was helpful and why'* is better than *'Do you agree that the event was helpful?'*
- A question should ask about a single issue and not be 'double' or 'multiply barrelled' by including more than one.
- If you can, make the questionnaires anonymous to elicit more honest feedback. Verbally pointing out that feedback is anonymous and you are interested in receiving balanced feedback can help reduce bias, as can ensuring forms are handed back to an evaluator who is not identifiable as a member of the core project team.
- Materials should be easy to complete, i.e. consider layout and instructions.
- All evaluation instruments should be piloted with a small group of people whenever possible before use to ensure that questions are easy to understand and that questionnaires and interviews are not too long or too short.

An example questionnaire is provided as an appendix to this chapter.

Interviews and focus groups

Interviews have been described by evaluators as conversations with a purpose. They are a very flexible and valuable evaluation technique.

Structured interviews collect data in an identical way for every interviewer, so the interview schedule (a guide that is used by the interviewer) can look very similar to a questionnaire. Structured interviews are a good way of collecting data when questionnaires are not appropriate, e.g. from those with poor written skills, or to achieve a random sample of participants.

Semi-structured interviews have a set of similar questions at the core of each interview, but the interviewer is free to move the questions around as he or she sees fit. The interviewer would also encourage respondents to expand on their answers and digress to include other relevant points. Semi-structured interviews are a useful way to collect quantitative and qualitative data at the same time.

Unstructured interviews are completely open-ended. The interviewer may note down a few topics of interest beforehand, but there is no formal interview schedule. The idea of the interview is to allow the respondent to define the situation and their opinions in their own words, so these types of interviews can be very useful at the start of an evaluation to help identify evaluation questions.

Group interviews (focus groups) typically bring together six to ten participants for a discussion around a particular topic, or set of topics. Respondents are encouraged to explain and qualify opinions, which can spark ideas from others in the group. For this reason, focus groups can provide a very rich source of information. It is important to select group members carefully: a diverse range of opinions is desirable, but some may feel intimidated and not speak up. Facilitators should ensure the discussion is not dominated by any individual, and should seek to bring out opinions from quieter group members. Flashcards and other exercises can be used to stimulate discussion.

Interview technique is a skill that can only really be developed through practice. A good interview should feel like an interesting chat between interviewer and interviewee. Try and encourage your interviewee to tell stories and give examples. Here are a few tips:

Do:

- Explain who you are and what the interview is for.
- Develop a rapport with the interviewee and show you're interested in their opinions.
- Ask questions clearly and clarify if necessary.
- Listen carefully so you can expand on relevant points. Make sure you know enough about the evaluation to ask good follow-up questions. It can be useful to prepare these in advance.
- Use non-leading probes like *'Could you tell me a bit more about that?'* or *'Why do you think you feel that way?'*

Don't:

- Feel you need to stick to the interview schedule: explore interesting issues as they arise.
- Ask leading questions or let your opinions come into the interview.
- Repeat exactly a question that you have already asked, rephrase it instead or drop it if you don't get a response.
- Do too much talking – you will know your interview is going well if your interviewee is doing most of the talking.

It is useful to record interviews (make sure you gain consent from your interviewee first) as you can then concentrate on interviewing rather than taking notes. There are many cheap, effective and unobtrusive small digital recorders now which can be put on the table during an interview or focus group discussion and played back through your computer. Take the opportunity to listen to the recording and reflect on your interviewing technique to help you improve.

Other data collection techniques

Questionnaires and interviews are not the only options when it comes to collecting data for your evaluation. You may like to think about incorporating some of the following more creative techniques:

- Electronic surveys or electronic voting to gather audience opinions.
- Using a graffiti wall, comment cards or 'post-it' notes during or at the end of an event as a lighter alternative to a questionnaire.
- Collecting 'vox pops' (short quotes) from audience members using a video camera or voice recorder, or giving audience members the camera and asking them to record their experiences.
- Having young children draw you a picture about their experience.
- Incorporating data collection into your activity, for example asking audience members to write down ideas about a topic near the start of a session and using these to stimulate discussion, then repeating as a reflection at the end to look at changes.
- Posing questions to an audience, who respond by lining up across the room on a scale of 'agree' to 'disagree'.
- Dropping pebbles in labelled boxes or using stickers and charts.

Mixing methods within the same evaluation can provide a range of perspectives on the success of your activity. This type of triangulation is useful to check whether the different sources of evidence are telling the same story about your project.

Sampling

The way you select your sample for the evaluation has a strong influence on the validity of your results. The sample will also determine, to

some extent, the nature of your questions. For example, in an ideal research scenario participants would complete questionnaires both before and after an activity. In practice this is rarely feasible unless you have a generous amount of time to spend on evaluation. So you may wish to ask a question such as *'Before this activity, how would you rate your level of interest in. . .'*, or look at other ways of assessing baseline levels of interest (for example talking to the teacher of a school group or asking an event/venue organiser what they know about their regular audiences).

It is important that your sample is as unbiased as possible. A self-selected sample will usually include those with strongest opinions about the programme (either positive or negative) because those who were indifferent are not motivated enough to give feedback. Questionnaire evaluations are particularly susceptible to this, although it can be avoided. Instead of leaving questionnaires out to be completed by those who wish to do so, either ensure everyone completes a questionnaire or randomly select a sample of the audience to complete them, perhaps offering a small incentive or even just by asking nicely and explaining how important feedback is to you.

As a guideline, a quantitative evaluation will need a sample of 35 to 500. This figure could rise to 1000 if you are planning to use statistical analyses to explore relationships between subgroups in the sample, although this is well beyond the scope of most science communicators' own evaluations. It may however be possible (and is desirable) to involve someone with social science research methodology experience to help. If you are running an activity that involves a small number of participants, a full census sample (i.e. asking everyone) is a good way to avoid bias.

For qualitative work, much smaller samples are needed. Between 5 and 20 individuals or groups are usually sufficient. It is not possible to be representative in the same way as with quantitative work, so the individuals involved should be selected to include those with the widest-ranging experiences or opinions.

Ethics

Evaluators have a duty to conduct all research with an ethic of respect for the participants, and to ensure that findings are as robust and unbiased as possible. The British Educational Research Association's *Revised Ethical Guidelines for Educational Research* (2004) are a good guide in this area. They cover researchers' responsibilities to participants, sponsors and other researchers.

As well as taking an ethical approach to the evaluation overall, it is essential to comply with relevant legislation such as the Data Protection Act (1998) if in the UK or similar legislation elsewhere and legal requirements in relation to working with young people and vulnerable adults. If you are based at a university or research organisation you are likely to need approval from your ethics committee ahead of conducting evaluation fieldwork.

6 ENTERING, ANALYSING AND REPORTING ON YOUR DATA

Quantitative data

The easiest way to enter data is into a spreadsheet so that each row corresponds to one respondent. If you have used questionnaires or structured interviews, number each paper questionnaire or interview schedule. This will give you a unique code and will allow you to double-check responses later if necessary. If your questionnaire/interview included some open items, you can enter them into the spreadsheet in the relevant row. You can then compare responses to the closed and open items. Electronic survey software allows you to download your feedback in a spreadsheet format, removing the need to enter the data manually.

With the data entered, you can calculate frequencies and create charts to present the quantitative data. If you are using Excel, the PivotTable function is a useful way of cross-tabulating responses. More advanced analysis can be performed in statistical packages such as SPSS (Statistical Package for the Social Sciences, since 2009 called PASW (Predictive Analytics SoftWare) then changed again in 2010 to be called SPSS Statistics).

Qualitative data

Qualitative data is less straightforward. When analysing such data, look to identify common themes in the responses: a process known as 'coding' the responses. A simple way to do this is category analysis, which involves grouping similar responses into categories, then counting up the number of responses in each. Category analysis works well for open questionnaire items or open items in a semi-structured interview. If your responses are very brief (for example if respondents are asked to give their impressions of the activity in three words) you could present the findings visually in a 'word cloud' using free software such as www.wordle.net

If you have interview or focus group data, you may have handwritten notes or a typed transcript instead of columns in spreadsheets. If this is the case, take a photocopy of the originals to use while coding the responses. If possible, leave a wide margin on one side of the page to note down thoughts or ideas. You can write notes in the margins then organise these into codes, or use different-coloured highlighters to identify different themes, or cut up the (photocopied) document and organise the slips of paper into piles.

With qualitative analysis, you can code in as much or as little detail as you like (or have the time for). It works well to read through data briefly first, getting an idea of the big picture, then coming back to certain ideas again later if you get the chance.

Dealing with too much data

It is easy to get carried away with evaluation and collect large amounts of data that would take an unrealistically long time to analyse. The first thing to do in this situation is prioritise. Go back to your evaluation questions and identify a few key pieces of information from your feedback that will help answer them. You can then put the rest of the feedback to one side (and remember to use briefer instruments next time) or save it to come back to in future.

Reporting

Reporting is a crucial stage in your evaluation as you complete the 'reflection' part of Kolb's (1984) cycle and review what worked, what didn't and – most importantly – what you would do differently next time. It may not seem important to write up all the details of the evaluation if the project was a one-off, but it is essential to capture learning at this stage. If it is not reported it gets lost, meaning that you and other science communicators miss the opportunity to learn from your mistakes and build on your successes.

The easiest way to write a report is to work through the items in an interview schedule for example, reporting on findings in each. A better way is to theme the report sections according to your evaluation questions or intended outcomes, drawing on several sources of evidence for each. Report the findings as neutrally as possible in the main body of the report, then discuss them in a concluding section. Presenting quantitative data in graphs, bar or pie charts helps to make

it easier for readers to see any trends you describe. Analysis of qualitative data should include plenty of quotes to help illustrate the themes you have identified. You may also wish to make recommendations for future projects based on the findings.

Increasingly, there are a number of arenas in which to share evaluations (by talking to colleagues, publishing through your own website, through the British Science Association's 'collective memory' database, or of course in academic journals).

By sharing evaluations across the science communication community we can develop more sophisticated answers to that tricky question: *'So did it work?'*

Key resources

Books

There are many books out there on research methods which can equally well be applied to evaluation. Have a look at the following:

- **Kumar R** (1996) *Research Methodology: A Step-by-Step Guide for Beginners*. London: Sage.
- **Weiss CH** (1972) *Evaluation Research*. Englewood Cliffs, NJ: Prentice Hall.
- **Chen HT** (1990) *Theory-Driven Evaluations*. Thousand Oaks, CA: Sage.
- Or have a browse through the journal *Evaluation* (Sage).

Guides

Alternatively, there are several guides that have been written specifically for those involved in public engagement:

- RCUK Evaluation: practical guidelines www.rcuk.ac.uk/aboutrcuk/publications/corporate/evaluationguide.htm
- Ingenious evaluation toolkit (includes evaluation guide, FAQs and useful links) www.raeng.org.uk/societygov/public_engagement/ingenious/evaluation.htm

Websites

- UK Evaluation Society www.evaluation.org.uk
- British Science Association collective memory www.collectivememory.britishscienceassociation.org
- Information Commissioner's Office (1998) *Data Protection Act* www.ico.gov.uk/what_we_cover/data_protection.aspx

- International Development Research Centre *Outcome Mapping* www.idrc.ca/en/ev-26586-201-1-DO_TOPIC.html
- Actknowledge www.theoryofchange.org

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APPENDIX

What do you think about the science event?

Please take a few moments to tell us your thoughts on today's event. Your comments will help us improve future activities, so please be completely honest. Thanks!

1. Please write down **three words** that describe the event

2. Please circle the face that describes your opinion:

What did you think of the event overall?	Good	☺	😐	☹	Bad
Do you think you will **continue to discuss** science after the event?	Definitely will	☺	😐	☹	Definitely won't
Before the event, **how much did you know about science**?	I knew lots	☺	😐	☹	I knew nothing
How much do you think you have **learned about science** from the event?	I learned lots	☺	😐	☹	I learned nothing

3. Please tell us. . .

What you enjoyed **most** about the event:	What you enjoyed **least**, or what could be improved:

4. Did you **learn something new** at the event? If so, what?

5. Has the event changed how you **feel about science and engineering**?

More interested	☺	😐	☹	Less interested

6. Please tell us why or why not:

7. Do you think any of this **relates to your own life**? Why or why not?

8. Do you have any other comments about the event?

9. What is **your age**?

☐ Under 16 (please tell us) ..... ☐ 16–25 ☐ 26–35 ☐ 36–45 ☐ 46–55 ☐ 56–65 ☐ 66+

10. What is **your gender**?

☐ Male ☐ Female

Thanks!