RACE
RAw Communications and Engagement

RACE PUBLIC ENGAGEMENT AND EVALUATION GUIDE

HOME

RACE: CHANGING THE WAY WE LOOK AT SCIENCE COMMUNICATION

RAw Communications and Engagement (RACE) is an EIT funded program aimed at changing the way scientists and researchers connect with the public about the broad area of Raw Materials.

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RACE PUBLIC ENGAGEMENT (PE) EVALUATION GUIDE

When implementing an outreach or public engagement (PE) event, often the last thing that comes to mind is evaluation. Generally, outreach events can be very busy for organisers. Running outreach events can feel like being a swan that looks smooth and seamless on the water surface, but is paddling furiously underneath. Indeed, those that are presenting or working with the public have limited headspace for planned evaluative efforts. It is understandable that the running of the day, lecture series or workshop often takes precedence. Yet, proper evaluation at its core is fundamental to improvement at all levels of outreach and public understanding.

IN THIS GUIDE, WE LOOSELY DEFINE EVALUATION OF PE ACTIVITIES AS AN EFFORT TO FIND OUT SUCCESSFUL ELEMENTS OF A PROGRAMME DIRECTED BY VARIOUS METHODS OF DATA COLLECTION AND MONITORING DATA, THAT IS, DATA ABOUT NUMBERS OF PARTICIPANTS AND THEIR DEMOGRAPHIC COMPOSITION.

WHY EVALUATE?

What is the point? Why bother? Evaluation seems like a large inconvenience at the start of event planning. Even though evaluation can be difficult and parts of its approach may seem foreign to physical scientists, evaluation is fundamental to iterative improvement as it makes one think more deeply about the purposes of any PE activity. Cyclical design allows you to develop programs that are grounded in the needs of your target audience and event organisers. This a practical effort in assessing short-term impact through evidence based claims, which can often be used as a base for further funding opportunities. The central key to this is that evaluation lends itself to successful and considered training and outreach events that become more professional and enjoyable.

WHAT ARE BAD REASONS TO EVALUATE?

Evaluation can have a bad reputation. It can seem like a complex add on to any project that is commonly unforeseen in the planning stages. Moreover, evaluation may be a mandatory component of programmes. Pressure from funders or the feeling that you should conduct an evaluation will lead to poor results due to a rushed job or lacklustre

implementation. Poor planning and delivery of evaluation will most likely produce results that are hard to interpret, ambivalent and in the end will not tell you anything of value. What you put in, is what you get out!

HOW MUCH CAN ANY EVALUATION LEGITIMATELY DETERMINE?

This often depends on the level of planning that went into the evaluation in the first place. A poorly planned and executed evaluation will produce untrustworthy results. Whereas a well-planned and well-executed evaluation should in theory provide better insights. Realistically, any training or teaching event or outreach activity is not going to change the world, impacts are generally moderate and do not last for inordinate amounts of time.This is one of the reasons why self-reflection and small changes can make a difference if you are working in similar contexts and lends itself to bit-by-bit improvement. In terms of a more formal evaluation, you also have to ask yourself a few questions. Is there a baseline for your data in the literature? If you conduct a pre/post assessment, can you readily see what impacts you have? The main things an evaluator can learn is how to make iterative changes. Take for example a lecture series. An evaluator can modify the lecture format, style and content based on feedback and continue to make changes in a confident manner over any number of iterations. In this style, the same evaluator has to be careful if they claim that the lecture series changes student attitudes toward given topic. This would be a stretch, and any determinations need to be balanced. Did your evaluation truly provide evidence of this or is bias playing a factor?

HOW ARE EVALUATION AND RESEARCH DIFFERENT?

The key facet of research is venturing into novel territory. Research has a focus on the new and forwarding knowledge in relation to the state of the art. Hence, adding to the exiting body of knowledge. It may contain evaluative elements; however, research cannot be simply an evaluation of a course, event or intervention. In contrast, evaluation generally assesses what when well and what went wrong. Its focus is not necessarily on the discovery of new information, although this may occur throughout the evaluative process.

WHAT DEPTH OF EVALUATION SHOULD YOU AIM FOR?

Often the depth of evaluation is not determined by your personal opinions. Practical considerations should always be at the forefront of an evaluators mind. If you are working in a school classroom, your event may be limited to 40 minutes or an hour. With restricted time, can you give over 10 minutes for evaluation without running out of time or ruining the vibe of the activity? Do you always have to implement a five-page questionnaire or are other options available?

Evaluation runs on a spectrum from simple self-reflection to research based assessments and everything in between. The associated commitment and cost also vary on this spectrum. In most instances, the evaluator must determine what data will be valuable, while also being attainable. For most activities, research-based evaluative efforts are not possible as they often take years to complete, while simple self-reflection or monitoring data may not provide enough detail to enact change. Therefore, a judgement call is required that often reflects a cost-benefit analysis. In essence, your evaluation method should have a reasonable chance of measuring what you actual claim it will measure and it has to be practical for you to deliver and interpret.

YOU HAVE TO KNOW YOUR LIMITATIONS

One of the contemporary debates in evaluation is establishing validity and rigour. The nature of inquiry has been built upon efforts made during evaluative processes to ensure reliability mechanisms are fundamental to its development. Key components that a novice evaluator must consider are bias, external effects and false positives along with methods to reduce/account for such phenomena. The fundamental message here is that all results have limitations and it pays to know them.

The rigour of an evaluation may be measured by the degree to which the researcher is honest about the design and their role in the process. Rigour influences all stages of evaluation and can be applied to broad areas such as documentation, procedures and ethics. To demonstrate rigour, documentation trails, peer reviews, analysing cases that do not fit your context and data checks/reflections can all be utilised. Evidence of a decision trail at each stage of evaluation provides confirmation for readers/assessors that any problems or issues were negotiated correctly. From the first step to the last, evaluation must be transparent and coherent so that another person can examine

data and determine that findings are realistic. Thus, establishing transparency creates a high level of rigour and reliability within a project.
With regards to validity, the problem resides in the fact that an evaluator brings their own lens and unconscious bias to a study. In determining validity, different perspectives from different people can set out how accurate a study is and whether it is, free from bias. Investigator bias can be a point of concern due to pre-acquired opinions or a desire for a certain set of results. Validity can be sub-divided into internal and external validity. Internal validity asks whether the study investigated what it set out to (something that was noted in earlier questions). External validity asks about the usefulness and transferability of findings.

Another pitfall in any research endeavour is that the assessment of the broad and general term 'attitude' is fraught with error. The problem with any linguistic terminology is what exactly do we mean by the term 'attitude'? The same argument applies to other terms like engagement or attention. Can you as an evaluator, readily define such terms so that any change can be measured? These are things that are argued about in the research literature and the novice evaluator is advised to have a more specific and measurable focus rather than nebulous terms such as 'attitude'. Social scientists spend careers arguing their corner with regard to various constructs. Therefore, the chances of a novice evaluator or someone from another academic field assessing these areas correctly is slim. Indeed, this reveals a larger problem with evaluation of PE in general. Evaluation may not lead to improvement. Measuring the wrong construct or measuring lofty and undefinable terms is the best way to achieve confusing and uninterpretable results. With this, an evaluator must be humble and cautious about any of their claims in relation to outcomes. The evaluative method will reveal insights, whereas results and reports less so. The process is key to learning.

HOW DO I STOP PEOPLE TELLING ME WHAT THEY THINK I WANT TO HEAR?

To be perfectly honest, you can't. The best you can do is expect this effect to happen and try to take as much account of it as you reasonably can when you plan, conduct and interpret your evaluations. You should be constantly asking yourself this question as an evaluator. Most surveys are designed in such a transparent way that the respondents know what the organisers are hoping would reflect a positive outcome. PE often works with self-selecting audiences, unfortunately. These groups are particularly likely to

view theresearchers as well-intentioned and want to give feedback which encourages them and their efforts. This is a key question as those who choose to participate in your evaluation will know immediately if there is a 'right' or 'wrong' answer to a question. Those who self-select will generally be positive unless they experience something they were not expecting. If you take a group of biologists on a biology field trip, they will generally be positively disposed so asking questions in relation to their feelings or enjoyment of the occasion can be wasteful. In addition, a member of the public who has just met you will rarely give truthful or candid feedback. When asked 'what did you think of the talk?' You will generally get responses along the vein of 'it was interesting', 'I liked it', 'very informative'. These 'safe' responses enable the participant to answer the question and not to hurt anyone's feelings or invoke any sort of controversy. With any dialogue based evaluative instrument, a sort of proxy must be built in so that you can get past the safe answers and start to scratch away at the surface of what the participant really thinks.

Generally, in a quantitative study, this is not too much of an issue as instruments are often filled out confidentially in the participants own time, lending itself to more honest responses. Furthermore, research instruments, such as Likert scales, are usually tested and refined with multiple questions to bolster the levels of honesty achieved. However, any quantitative assessment still has to be implemented properly based on where it was derived from the literature.

In the qualitative domain, this is a tricky area to negotiate. Take for example any interview scenario, why should a participant tell you the truth? This is where practice is key. An experienced interviewer will know that they have to quickly build a rapport with the interviewee and maintain this throughout the interview. Try to convince the participants that you genuinely care about all feedback – positive or critical – because you want to improve the project. However, how is an evaluator supposed to entice unedited behaviour when conducting an observation? Think about when an inspector came into class when you were in school. Was it like every other day or did the process of observation drastically change the behaviour of the student and teacher. To legitimise an evaluation, techniques can be utilised to aid in provoking honest answers. Respondents giving feedback anonymously and/or to independent evaluators can reduce this problem, but never eliminate it entirely. However, the cost of professional independent evaluators is often hard to justify within the small budgets of most PE projects. A recommendation is designing evaluation activities in which participants become so engrossed that they tend to switch off their internal editor and reveal what they really think. Examples of which include debates or drawing activities. Nevertheless, these are challenging to design.

WHEN SHOULD I START THINKING ABOUT TYPES OF EVALUATION?

There are two types of evaluation – formative and summative. Formative evaluation occurs when a programme or activity is being designed. It is often takes the form of pilots and the key focus is to modify or make revisions for improvement. Formative evaluation can be an ongoing process throughout an operation cycle, and once finished, the findings are typically used to feed into any summative evaluation. Formative evaluation is a vital aspect of public engagement and can fundamentally shape a project.

Summative evaluation occurs after the formation and design process is complete and is fundamental in deciding if an activity is continued, adapted or improved. Summative evaluation looks to see if outcomes are achieved after a project.

If you were to compare both to cars, formative evaluation investigates the process of building a car, whereas summative assessment brings the car to the track for testing.

WHAT AM I REALLY TRYING TO FIND OUT?

Central to any evaluative process, is figuring out what exactly your evaluation is trying to determine? What are you key evaluative questions? This is vital as the core questions are not the same as survey or interview questions, they are guiding questions underpinned by objectives and goals. Most PE projects do not spend long enough considering their objectives/ purposes let alone identifying their key evaluation questions.

Certainly, this can be a tricky undertaking. For example, if you are conducting a one-day event that is taking place in your university whereby the public, whose age varies from children to adults, are shown and allowed to interact with solar panels along with their various functions and applications, what are the criteria for success? If the participants leave with a higher level of knowledge in relation to solar electricity generation, was the day a triumph? Well, how much more knowledge did they attain? Was there an age or gender differential? What aspects of solar energy did they learn about? Given the above, it should be noted that evaluative efforts require a specific focus, which should be underpinned by the goal of the activity. Keeping with the above example, participants may have learned more about solar energy, but we have no data in relation to interest, engagement, conceptual change, enjoyment and not to mention surface layer monitoring such as the numbers who attended and their profile. As such, one has to think about their outcomes in relation to their activity. Firstly, what is your goal? Secondly, what is a fair and operative assessment of said goal? This is where evaluation comes to the fore and should help determine your overarching questions. Examples with some insight are below.

EXAMPLE 1

A two-day training course on environmental remediation using a peer-teaching method.

The example above has some key components. Firstly, it takes place over two days. With this, is there an assessment of both days? Are the days radically different? Is one day theory and one day practice? The overall structure will determine some of the more practical elements of when and how to evaluate and should be thought of during the planning stage. Secondly, the course is about environmental remediation, a specific area of environmental sciences and protection. Are your audience environmental science graduates, environmental professionals, or a mix of scientists and/or lay individuals? Based on this, you could determine if you should assess participant interest. If they are a self-selecting group, this may not be the best option as the level of interest may already be high. However, for a lay audience, assessing their interest might give valuable feedback on how to make your course more accessible. One could also look at learning, understanding and value. This is particularly suitable if the course works with participants who have a higher level of prior knowledge as they can provide considered and valuable data in relation to content and delivery. Finally, the course focuses on a peer teaching methodology. The question has to be asked as to why this is the pedagogical choice. Does this aid in the learning of the content? Any participant will be able to give feedback in relation to teaching and learning methods. Moreover, teaching and learning methods are highly flexible, meaning they are malleable and work effectively with evaluation, whereas the content may be fixed, reducing levels of iterative improvement possible.
In the end, your overarching evaluation question may be:

How do peer-teaching methods target learner knowledge acquisition in relation to environmental remediation?

In this instance, we are asking if our teaching or training method is effective in tandem with our learner goals for the course.

EXAMPLE 2

An open day stand with interactive demos, music and video clips being played on screens in the background.

So in this example, a stand is being manned at an open day. The stand has a number of interactive demos, while music is playing, and videos are being played on a loop in the background. What is the key focus in this instance? Are the music and video ancillary

to the demos or are they important to the experience. Are the demos the attraction? Do some demo's work better than others? Does the demonstrator or their experience/ technique have any effect on the success of the event?
In this instance, evaluating both event organisers and people running the stand can prove to be effective. Asking the people who are on the stand throughout the day will illuminate what demos worked best and they will generally be candid regarding the impact of the additional music and video clips. They can also provide a keen insight into the challenges on the day. Assessing participants, in this instance, the public, can prove to be a little trickier, especially, if you want depth in relation to your data. The public is not there to fill out surveys for the stand; they are there to gain information or have an enjoyable family day out. However, these interactions with the public may be the key success criteria for the open day event and hence determine evaluative efforts. The overarching question may ask:

What aspects of the open day stand generated public interest and enjoyment?

With this question, we are examining simple monitoring based data of the public due to the constraints of the context. We can assess perceptions on a deeper level (interviews, questionnaires) by working with the attendees at the stand and event organisers.

HOW CAN I EVALUATE IN A WAY THAT DOES NOT RUIN THE EXPERIENCE?

Imagine, as you take your seats in a restaurant, if the waiter brought you a survey instead of the menu. He then proceeds to deliver a different questionnaire after each course. After coffee, the meal concludes with a focus group facilitated by the head chef. How are you going to rate this experience? Why should we expect a family at science festival to feel any differently about our attempts to evaluate their day out? The opening example is extreme, however, there are times when interrupting someone and asking them for their opinion is wholly inappropriate. For an evaluator, this is a judgement call. Take for example a classroom intervention about the use of smart boards in class with 10-year-old students. If you use a pre/post method, the students will become aware that this class is different from other classes; they may modify their behaviour, and feel like they are being watched. Whereas, placing the evaluation at the end, may lend itself to a more enjoyable day and the students seeing the evaluation as being a separate entity.
Any assessment must be respectful of people's time, this is why observation, self-reflection and team debriefings are often used when you think that it can lead to meaningful insights on participants' views and the outcomes, rather than just being a tick box activity.
You can also use some creative evaluative formats that seem like fun to participants.

Examples include drawing, sticky note walls, card sorting games or a blob tree (www.blobtree.com)

SHOULD I USE QUALITATIVE OR QUANTITATIVE METHODS?

When choosing a methodology, the approach chosen should be the one that can answer all aspects of the evaluation questions and objectives. In deciding the choice of methods, an exploratory approach can be instigated based on current literature, standard practices and by working with others from similar fields. A pragmatic approach is beneficial without any preconceptions about what evaluation 'should' look like. Hence, qualitative and quantitative methods can be employed by themselves or a mixed methods fashion. This is the key planning step in any evaluative endeavour. The evaluator must think about the questions they are trying to answer, how much information they already have, who and what can they evaluate and, in the end, what will enable the generation of usable data.

As noted, there are three broad approaches, qualitative, quantitative and mixed methods. Qualitative methods are generally employed when an evaluation is exploratory. There may be very little information on a topic or activity, you do not quite know what to expect and want to accommodate a wide variety of possible outcomes. For example, interviewing, observing or conducting a focus group with event organisers or staff will potentially garner excellent actionable insights. Words are valued in qualitative methods and as such, they take up a lot of time. It is harder to gain participation and the data analysis can be perilous as it can be heavily subject to bias and interpretation. In light of this, a qualitative interview would not be appropriate for assessing the publics' views of a science festival. However, a short qualitative instrument could be used in these instances to attain a sort of 'vox pop' or 'sound bite' that reflects someone's gut feeling initial perceptions.

Quantitative approaches are number based. They break up the evaluation into more measurable variables. However, an evaluator must know in advance what variables they want to measure and how they will measure them. Within the socio-scientific realm, scales are often used to assess interest, engagement and even controversially vague terms such as attitude. Care is required that any instrument used actually measures what you intend it to.

The advantages of the quantitative approach is that a large amount of data can be quickly generated from a lot of participants. In addition, the tabulation of data reduces bias and provides clear results with binary straightforward actions. In this way it can be more beneficial than a qualitative approach which may not give actionable results. Yet, one of the biggest let downs in quantitative assessment of social realms is false causal links and correlations.

On the other hand, mixed methods is a combination of qualitative and quantitative approaches and as such gives the advantages and disadvantages of both. This can lead to a better evaluation, if results align. However, more data may result in divergent results, leading to an impasse. In terms of cost effectiveness, mixed methods can also be the most difficult as a multi-person team of evaluators may be required to plan, design, implement and interpret findings. Strong coordination and organisation is a must, but when executed successfully, mixed methods can give a wider snapshot than utilising quantitative or qualitative data alone.

As has been noted before, drawing generalisations using either of these two main approaches requires considerable skill and experience in design, implementation and interpretation – this is the work of social science researchers. Most PE evaluations are not expected to involve this – they are about looking for direct observational evidence or participant responses about how to improve the project in reaching its short-term, tangible objectives. Some of the most common methods used are interviews, participant observation and surveys.

WHAT ARE THE BIGGEST MISTAKES IN DESIGNING SURVEYS AND QUESTIONNAIRES?

How beneficial has this evaluation guide been to you thus far? Have you ever heard of a leading question? Many evaluative efforts are built around surveys and their effectiveness hinges on their design, which requires thorough effort and revision. Questions in their design, should be neutral, they should not aid in the development of an opinion, rather allow one to be formed. Even if you ask, "has this guide been beneficial in any way thus far?" I am planting the seed that the guide has the potential to be 'beneficial'. It is better to ask to grade or rank the guide and ask why the participant chose their assessment. Grounded in this, the evaluator must think about their language and not ask children about 'contextually transcendent design methodologies in modern instruction' (or anyone for that matter!). Think about the audience, their abilities, knowledge and time. How many online surveys have you started because you had a chance to win something and then lost motivation ten minutes later after monotonous excessive questioning? Ask yourself if you would fill out your survey. Test it out on others and see what they say, you will always be surprised at the amount of valuable feedback you obtain and this can save hours of work later on in the evaluative process.

The key thing to note is that designing robust questionnaires is much harder than it first appears. The following are a list of typical 'don'ts' in survey design.

- Don't asking too many questions – respect your participants time; less is more

- Don't have a confusing layout
- Don't ask for too much demographic information at the start that is intrusive and not relevant
- Don't ask leading questions – often unintentional e.g. in wording or with unbalanced rating scales
- In multi-choice questions, don't provide too many options (these slow respondents down) or include options which overlap
- Don't ask questions that are not clear and specific e.g. asking more than one question at the same time; using confusing language and jargon for the target audience; questions with negatives and especially double negatives;
- Don't ask questions without thinking about how you are going to analyse the replies – this results in wasted questions that will not produce useful responses
- Don't get the wrong balance of short and long questions. Short, closed questions work well at the start while a small number of longer, open-ended questions work better at the end
- Don't skip piloting the questionnaire with a small test group (as near as possible in composition to the final audience). Act on their feedback/responses to improve the clarity of the questions and the structure of the survey.

HOW DO I GET PEOPLE TO TAKE PART IN MY EVALUATION?

It depends! This is often one of your biggest problems when evaluating any PE project. Few people enjoy filling out questionnaires. I know this is obvious but we tend to ignore this in our rush to fulfil the over-ambitious evaluation plan we promised in our funding proposal (See above issue about ruining the experience). If you are working with the public, simply asking them in a nice and polite manner may be enough to entice them. Can you quickly explain the value of evaluation to the project – especially if this relates to a shared value of the respondents? This is key. We often forget be warm and appreciative of anyone who agrees to take part .Explain clearly how their data and views will be used in an anonymous manner and how they are not being tested. To achieve more success, think if you can design an evaluation experience that is actually enjoyable for the participants.

If you are conducting a long form interview designed for teachers, you may need to use social media and online forums, visit schools and go to teacher conferences to find participants. The depth you need to go to really depends on the type of evaluation and the type of participants. If you are setting out to interview people who have climbed Mt. Everest, this will be a daunting task; they are few and far between and probably geographically dispersed. Moreover, it may be impossible to determine the actual number of people who have climbed Mt. Everest. For the sake of argument, let us say its 100 people, then is attaining two participants seen as a success or a failure? The point I am trying to develop is that getting people to participate is inextricably linked to the amount of potential participants. For smaller sample groups, incentives may need to be used (although they

must be used in an ethical manner) to elicit participation. An evaluator needs to determine an appropriate number of responses with which accurate assessments can be made. Based on this, the evaluator may set out a plan of action to attain the set participation rate or above. This is very well and good in theory, but practice, authentic and unique contexts will provide more insight into participation rates than any guide.

ARE THERE ANY ETHICAL ISSUES TO CONSIDER WHEN PLANNING EVALUATION?

In any evaluation, some fundamental ethical standards must be upheld. The two pillars of ethical practice include confidentiality and informed consent or ascent. In relation to informed consent, a participant should be fully aware of the purpose of any evaluation and how their input may be utilised. In addition, structures should be put in place so that any information received from a participant is done so in the strictest confidence. Any identifying material cannot be used in an evaluation, nor can material be handled or seen by any other individuals than those who are in charge of the evaluation.

Ethics are also very important when working with children or vulnerable participants. This is where informed ascent is required from the participant while also attaining consent from parents or guardians. Moreover, when evaluating projects involving children and people who are vulnerable, it is important that none of this communication takes place through live or online channels which are private to the respondent and the evaluator i.e. the personal social media account of the researcher. Moreover, an evaluator needs to be careful in highly sensitive or emotive areas such as health-related research.

Ethics is a vital part of any social science endeavour. If your activity is part of a university or third level environment, often ethical approval is required from a Research Ethics Committee (REC). This should be sought after as a project that is developed in an ethical manner generally aligns with successful and well-designed studies. For more information, please refer to the World Health Organisation (WHO) ethical guidelines and the British Educational Research Association (BERA) ethical standards. Researchers collecting information for PE evaluation in Europe from May 2018 should consult the new EU General Data Protection Regulations (GDPR) www.eugdpr.org on how participants' data and responses should be collected and handled.

HOW DO I INTERPRET MY EVALUATION?

Interpret with great caution. Depending on the results, outcomes can be diverse to say the least. Moreover, results may not be predetermined so both an inductive and deductive mind-set is always a plus in evaluation. You may think that your evaluation is examining

participant perceptions of a science show when in fact the results end up showing a strong gender bias. You may not have anticipated this result at the start, but you can see how important the new result can be. Your interpretation always links back to your initial questions, the goals of evaluative efforts and you own preconceptions. Any interpretations need to be taken with a grain of salt, they need to be allowed 'sit' and maturate. In addition, interpretations need to be run past other people and bounced against the literature. Do your results stand up to scrutiny and more importantly make sense in the context of your work? Do not pretend you can make generalisable claims or discern long-term impacts from any PE evaluation study – you can't. Instead, look for actionable insights to improve your PE practice.

WHAT IS THE DIFFERENCE BETWEEN CORRELATION AND CAUSATION?

If I told you that every time I drank a cup of tea during a football match, my team scored, you would say that I am deluded. Yet, there may be a correlation of 1:1 between my drinking tea and my team scoring. However, correlation is not causation and inferences, especially in turbulent social settings, are always cause for caution. If you run an after-school science club and the local school sees drastic improvement in the uptake of science, you cannot claim that your club is the catalyst. This may seem like a logical inference, especially if you are the (biased) science club organiser.

The social sciences are witness to a litany of such claims from basic evaluation to high-level research. What is important becomes measurable and what is measurable becomes important. In the case above, with the numbers of students, there may be a trend, but the keen-eyed evaluator will realise the milieu of influences that can affect a change on an outcome. Whenever you are making an inference, always tread carefully.

WHAT SOFTWARE CAN BE HELPFUL?

Software can be used in data collection and data analysis. Much of the data collected in any qualitative aspects of evaluation can be audio recorded or video recorded. Following this, they can be transcribed and the following data analysis can take place using manual or digital methods. In terms of qualitative data analysis, NVivo is the most utilised software during the coding process. With qualitative data, paper and pen collection of data is still common, but is slowly being replaced by iPads with data collection software and online websites such as Survey Monkey. Pertaining to the analysis of quantitative data, most statistical analysis would be conducted on software such as SPSS.

You do not necessarily need to use any software in your evaluation. This is particularly true

during the data collection step, however, during the evaluation, software can be a drastic timesaver, even if some up skilling is required.

WHAT SHOULD I DO WITH MY EVALUATION RESULTS?

Plan to disseminate your evaluation strategy and budget at the start, rather than as an after-thought. Depending on the context, results may be of concern to very few or a large number of people. You also have to ask yourself if you are confident enough in your results, based on your thorough planning of your evaluation, to disseminate them. In research, the highest level of evaluative activity, conference presentations and publications are sought after. However, this type of activity is not applicable to most programmes that want to improve their practice and give an insight to funders or organisers. With this in mind, one could disseminate their results to all involved with the event, while having a different report for funders or the public. Perhaps the evaluation and summary of the event can be placed online and spread throughout communities of practice such as forums and social media groups. Like many other aspects of evaluation, you need to know your audience. PE practitioners need to alter and attempt to improve their practice based on evaluation. If you don't do this, you have completely wasted your time evaluating the project and the time of the participants who responded.

In efforts to disseminate results in an effective manner, create different depths of dissemination output for different audiences – e.g. easily consumed infographic for the widest audience; short pdf guide in a format, which is easy to scan; longer article in a professional publication (not a research paper). Allow readers to progress from one level to the next deeper level if they wish.

WHERE CAN I FIND OUT MORE ABOUT EVALUATION?

There are many concise guides available online to help researchers manage the evaluation of their public engagement projects, for example:

Evaluation: Practical Guidelines. A guide for evaluating public engagement activities (Research Councils UK)

http://www.rcuk.ac.uk/documents/publications/evaluationguide-pdf/

Evaluation toolkit (Science Foundation Ireland)
http://www.sfi.ie/engagement/sfi-discover/guidance-and-best-practice/
How to... ...evaluate public engagement projects and programmes (National Co-ordinating Centre for Public Engagement)
https://www.publicengagement.ac.uk/sites/default/files/publication/evaluating_your_public_engagement_work.pdf
Public engagement evaluation framework (Science and Technology Facilities Council)
https://www.stfc.ac.uk/files/corporate-publications/public-engagement-evaluation-framework/
Public Engagement Evaluation Guide (Beacons for Public Engagement, Manchester)
https://www.manchesterbeacon.org/app/webroot/files/manchester-beacon-pe-evaluation-guide.pdf
Effective questionnaires for all. A step by step recipe for successful questionnaire (Ben Gammon, Visitor Research Group)
http://didarchtik.exarc.net/files/Attachment%202%20-%20questionnaire_recipe_book.pdf
A guide to evaluating your Ingenious project (Royal Academy of Engineering)
https://www.raeng.org.uk/publications/other/ingenious-evaluations-a-guide-for-grant-holders
Evaluation methods for public engagement projects (University of Bath)
http://www.bath.ac.uk/marketing/public-engagement/assets/UCL_Methods_for_evaluation.pdf