How can I do this better?

a practical guide to help volunteers and organisations engage with young people, teachers, and the general public

ROYAL AIR FORCE

Developed by:
Dr David Wilkinson
Dr Kerry Baker
James Exley
Carrie Jackson
Illustrations: madeby.studio

Contents:

PART ONE: practical tips and guidance to help support you in your outreach and enagement work.

1. Why do people do outreach with young people, teachers and the general public?

2. What kind of activities can you use to engage with teachers, young people and the general public?

3. Working with audiences and participants

4. Planning your outreach and developing your skills

PART TWO: tools and examples to help to you to evaluate what you do and measure its impact.

5. Why do people want to review or analyse their engagement activity?

6. Dealing with feedback and impact data

7. Tools and techniques to help you evaluate

8. Planning your evaluation and learning from it

9. Looking at the bigger picture of evaluation

CHAPTER 1: Why do people do outreach with young people, teachers and the general public?

About this handbook

How can I do this better: a practical guide t
community groups engage with young peop
general public.

This handbook comprises two parts: **PART ONE** presents
guidance to help support you in your outreach and engage
provides you with some tools and examples to help to you
measure its impact.

CHAPTER 2: What kind of activities can you use to engage with teachers, young people and the general public?

CHAPTER 3: Working with audiences and participants.

CHAPTER 4: Planning your outreach and developing your skills.

CHAPTER 5: Why do people want to review or analyse their engagement activity?

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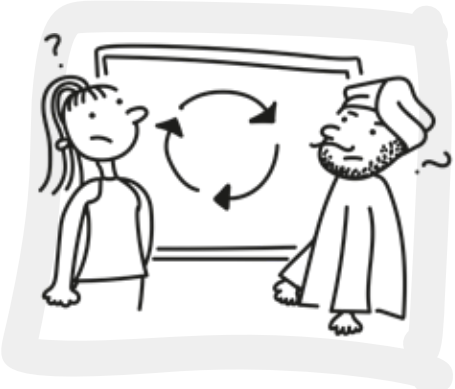
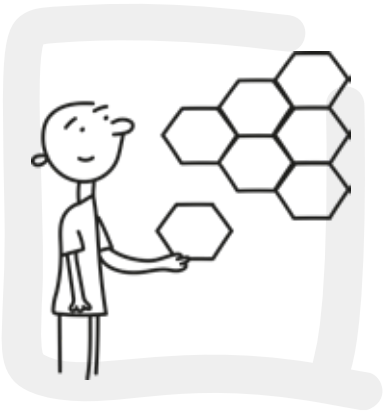
CHAPTER 7: Tools and techniques to help you evaluate.



CHAPTER 8: Planning your evaluation and learning from it.



CHAPTER 9: Looking at the bigger picture of evaluation.

Is this handbook for you?

If you are planning to talk about your job or your interests and experiences to people of any age, then this guide is for you. It is designed as a dip-in resource and contains easy to understand introductions to topics, with suggestions and useful tips for those involved in outreach, public engagement, schools liaison and activities that may form part of corporate social responsibility commitments.

How this handbook can help with your engagement work

If you are just beginning to deliver outreach activities, you can use this guide as a starting point for developing your engagement, avoiding the common pitfalls and designing something effective. If you are used to doing these activities then you can use this guide as inspiration for adapting, changing or building on your activities, trying something new, developing a different set of skills and feeling the exhilaration of something fresh.

Setting realistic expectations for outreach

If you are volunteering to do something that isn't directly related to your job you want to know that it's worth it. We've all heard those stories, about that one key moment of a person's life that made them want to be a vet or an engineer and gave them the determination to follow their dreams. It's amazing if you have had that moment, and must be amazing for the person who inspired it. But the reality is, for most people, that's probably not how it actually works.

For many people career and future goal decisions come down to a combination of what they like doing, what they are good at and what opportunities are out there. Your interactions can have an impact in these aspects. It might be a small impact, but that small impact can make a permanent change. And it's the combination of small impacts that make the difference, a lasting, well thought out, consciously decided difference.

Outreach activity providers can introduce new things, highlight strengths and most importantly showcase opportunities. Trust that your time and energy can make a difference.

Evaluation: what we can and can't tell

Even the most thorough research lthat looks at how interactions influence people cannot prove absolute results. Be realistic about your expectations.

Use this handbook as a guide to designing feedback and evaluation methods for your activity; methods that suit your needs and the needs of your organisation. It is written to fit a wide range of activities, workshops and experiences. It should help you to explore the effect and impact of your efforts.

PART ONE

CHAPTER

1. Why do people do outreach with young people, teachers and the general public?

In this chapter we discuss:

- About this handbook
- What is 'outreach'
- How can volunteering help
- Part of the job
- Giving something back
- Top reasons people volunteer
- Value of engagement and volunteering for employers
- What stops people from volunteering

About Part 1 of this handbook

Part 1 of this handbook presents some practical tips and guidance to help support you in your outreach and engagement work. Engagement activities can be given a variety of titles or descriptions, including schools outreach, schools liaison, widening participation, public engagement, corporate social responsibility, and others, the main differences being the reason you are doing the engagement, the audiences you are engaging with and any structure your engagement has.

The two ends of the spectrum are probably working with a school group and working with the general public. When working with a school group you are likely to have a lot of structure for your interaction i.e. a fixed group size, fixed start time, fixed location, fixed time limit. In addition you are able to get background information about what they already know and don't know. With public engagement, although you may have a start and end time, a fixed location etc. your actual interaction is likely to be less structured, the audience is not fixed and you could be interacting with 5 year olds or 50 year olds.

What is 'outreach'

Outreach is the activity of providing services (often educational or experiential) to groups that might not otherwise have access to those services. A fundamental element of outreach is that the delivery of the outreach takes place at the location where groups are usually based.

Outreach is usually delivered in a less formalised way to traditional educational or experiential events. They are very often voluntary (for participants, and have few enforceable obligations.

Activities and events that are labelled 'outreach' usually have an educational flavour or theme, and often raise awareness of developmental opportunities, such as training or employment programmes. More often, outreach provision is targetted at specific, under-represented groups, who have limited access to mainstream programmes or provision.

Organisations direct their outreach provision to align with organisational goals and targets, such as encouraging more socio-economic diversity in the people they recruit. Others, including universities and alternative HE providers, offer outreach experiences to those who might typically not progress to higher education programmes of study (including those from lower income families, care leavers and adult learners).

How can volunteering help

When volunteering to take part in any kind of outreach, and trying to work out what to do, it's always best to start with an assessment of what structure is in place, what parameters you have to fit in with. This will guide you as to what types of engagement activities will work and help you to plan your engagement appropriately. For example, if you know you are going into a school to work with a class of 30 pupils for an hour you have a solid interaction structure, so it will be easy to run an activity that has a clear plan, that all participants do the same thing at the same time and reach the same conclusion at the same point. If you are taking part in a science festival and you have a table or stand, participants can show up at any time of the day and stay for as long as they want. In this scenario you have no interaction structure so you need to design your engagement to be flexible to people starting and stopping at different times and progressing at different rates.

It is always best to think about the interaction structure you are working under before location, group, audience etc. For example, if you are supporting a careers fair in a local school which is made up of 20 employers in a hall and pupils can come and go as they please it is best to think of this as a public engagement activity, rather than a schools activity and design your interaction based on this.

With so many titles, descriptions and reasons for taking part there can be some confusion but if you focus on the aim of your interaction, what do you want to achieve, and what structure you have to work with, the titles don't really matter.

Part of the job

People choose to volunteer to support outreach activities for a wide range of reasons. A number or organisations now ask their employees to engage in community or charitable work as part of their employment duties. It is common for companies to allow employees to undertake a number of hours voluntary work per year as part of their job role.

Giving something back

When asked about volunteering and participating in outreach activities most people say that it offers the chance to give something back to their community or make a difference to the people around them.

The Community Life Survey is a household self-completion survey of adults aged 16 or older in England. In the most recent survey (published in July 2020) the most common reasons for formal volunteering was linked to respondents wanting to help others (47% of all of those surveyed indicated this).

Source: Volunteering and Charitable Giving - Community Life Survey 2019/20

Adding to your own personal and professional development

Volunteering can provide enriching and inspirational experiences for young people, teachers and the general public. It also provides an opportunity to build on your existing experience and knowledge, as well as developing new skills that can support you in your day-to-day work.

The STEM Ambassador Programme is a national volunteering initiative managed by STEM Learning (working with around 27,000 volunteers). This programme has established a number of professional development benefits associated with conducting voluntary/outreach work, including:

- More motivated employees.
- Increased communication and presentation skills.
- Greater alignment with an employer's Corporate Social Responsibility initiative.

Top reasons why people volunteer

1. To give something back to an organisation or community.
2. To make a difference to the lives of others.
3. To spend quality time away from work or a busy lifestyle.
4. To help the environment.
5. To support others less fortunate or without a voice.
6. To feel valued and part of a team.
7. As a route to gaining confidence and self-esteem.
8. To develop new skills, knowledge and experience.
9. To gain accreditation or professional recognition.
10. To enhance a CV.
11. As a way of improving employment/career prospects.

What stops people from volunteering

A research project asked this question as part of a national survey of volunteering and charitable giving. The most common reasons for not being able to volunteer was lack of spare time and work commitments. Lack of appropriate information about the volunteering opportunity was also highlighted as a barrier.

Want to know more?
Download the full report here.

Helping out: a national survey of volunteering and charitable giving.

Value of engagement and volunteering for employers

Whilst volunteers choose to engage for a variety of reasons, employers tend to be more focused on the impact for them and their workforce when engaging in outreach initiatives. The Chartered Institute of Personnel and Development explored the hidden benefits and longer-term impact for businesses when they connected volunteering to staff development. Some of the recognisable benefits for employers include the link between volunteering and employee development and the opportunity to engage with employees, whilst improving communication and understanding of the local community. In addition, employers can also build stronger teams, and improve staff morale whilst improving overall brand reputation and demonstrating a commitment to make a difference to society.

There are many other organisations who engage in outreach work, particularly in the areas of STEM engagement. At the University of Leeds, for example, they focus on providing inspirational activities that support learners to consider higher education as an option. They achieve this via a programme of talks, webinars and study resources.

CASE STUDY

RAF Youth and STEM: engaging with schools

The RAF Youth and STEM team deliver engagement activities and events across the UK. They deliver in primary and secondary schools and host events and activities at educational venues and RAF bases nationwide. The RAF Youth & STEM team work with a range of academic and educational partners to design resources and deliver STEM activities.

One of the schools that the RAF Youth and STEM team recently worked with was Ridgewood High School, Dudley. The school is a mixed gender secondary school with 812 pupils on roll. It is a non-selective school and performs below the national average for progression in 8 core subject areas (including maths and sciences). Approximately one-quarter of pupils are classified as eligible for free school meals. The latest Ofsted report awarded the school 'Grade 3 (requires improvement)'.

Benefits of engagement

Ridgewood High School got involved with the RAF and their delivery partner (Hyett Education) following teacher Lisa Jones' family day trips to RAF-sponsored events and engagement days. During these events she was impressed by the STEM activities and the energetic and inclusive delivery approach. After being informed by Hyett that there was a Mighty Minds Robotics competition to be held in the near future, she signed her school up.

Encouraging more girls and pupil premium students

The school were keen to support the RAF's aim in getting more girls and Pupil Premium students interested in STEM subjects. They found that the real-world context of the activities helped to enhance engagement and enabled students to see how it might benefit them in future.

Linking up with other outreach providers

Due to the connection with the RAF Lisa looked for information on the STEM Learning website to help with her science club and reached out to the local university. She attended a STEM conference with Google, held at the University of Wolverhampton and has maintained contact with their Science STEM Ambassadors. She is looking forward to holding many more future events at school following the lifting of Covid restrictions.

The Impact of volunteering in schools (STEM Ambassador and school perspectives)

This independent investigation of the STEM Ambassadors programme analysed a number of relationships between STEM Ambassadors and schools. The seven case studies in this report are presented as narratives, telling the story of each engagement and how it benefited or impacted young people and their schools, as well as the employers and STEM Ambassadors involved.

Want to know more?
Download the full report here.

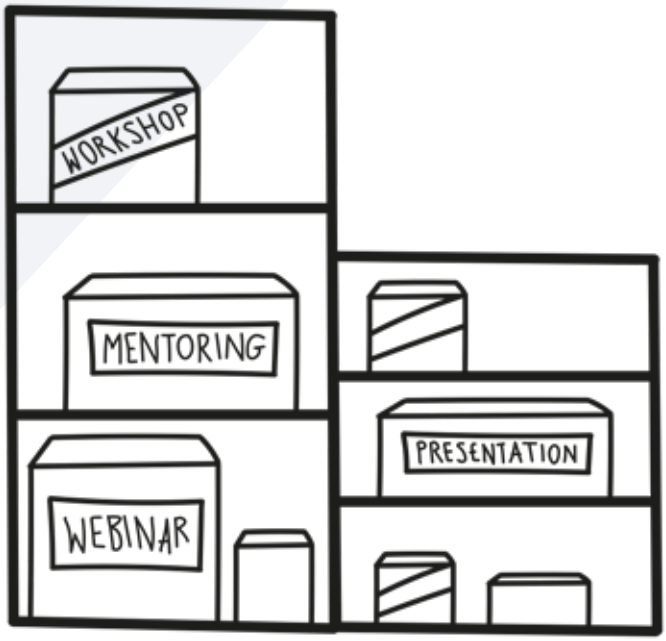
The Impact of STEM Ambassadors

Volunteering to learn: Employee development through community action

Research exploring volunteering typically focuses on the impact on the recipient organisation or individual. This research turns the tables by considering the impact on the employee. The aim of this research is to delve deeper into this link to understand how employees develop through participating in volunteering schemes.

Want to know more?
Download the full report here.

Volunteering to learn: Employee development through community action



CHAPTER

2. What kind of activities can you use to engage with teachers, young people and the general public?

In this chapter we discuss:

- Presentations
- Practical sessions
- Workshops
- Quizzes
- Handouts
- Videos
- Pre-existing materials and activities
- Stall or Table activities
- Demonstrations
- Busking

Presentations

The main thing to remember when giving presentations is that YOU are the one giving the presentation, not the slides, not the gimmicks, not the videos you might have included. You are the key focus of a presentation, everything else is a bonus.

If you are delivering a presentation it is best to feel comfortable and confident with the topic. Usually presentations for outreach or public engagement are about you or what you do, and those are the simplest topics for YOU to talk about. In fact, no one else knows it better!

There are numerous videos, guidance documents and training packages available online for giving a great presentation, so have a look around and find something that suits you best. When delivering presentations, make sure you have a clear structure of what you want to say and how you are going to say it. Make sure the language used is appropriate for the age of the audience and their prior knowledge and experience. Make sure that what you want to say fits comfortably within the time you have available. One effective way to ensure this happens is to rehearse what you are going to say and do. If you are comfortable with your materials, you will sound more natural. The more natural your delivery, the greater your impact.

Making better presentations

Presentations can be difficult to get right. Poorly designed and delivered presentations can leave your audience feeling confused...or even bored! Here are some tips to make them as engaging as possible:

Don't read your slides - Try not to read your slides from the screen. Your audience will zone out and stop listening to what you are saying. Your description should add to what is on the slides. Engage your audience by sharing details about what is contained on your slides.

Keep your slides short and sweet - No one likes to read lots of text from a screen. Keep your slides short and to the point. Some experts suggest that we should use the 5/5/5 rule: no more than 5 words per line of text, a maximum of 5 lines of text per slide, no more than 5 text-heavy slides in a row.

Don't forget your audience - Remember who you are delivering your presentation to. Joking can lighten up a presentation, but if you use it inappropriately your audience might think you don't know what you are doing. Know your audience, and tailor your presentation to their tastes and expectations. Teachers can be really useful to run ideas by for presentations because they know their students and how to engage with them.

Make it visible - Your text should be easy to read and pleasant to look at. Large, simple fonts and theme colours are always your best bet. The best fonts and colours can vary depending on your presentation setting. Presenting in a large room? Make your text larger than usual so people in the back can read it. Presenting with the lights on? Dark text on a light background is your best for visibility. You should also carefully consider the typeface and colours you use in your materials - particularly with reference to learning abilities and the requirements of your audience (a very useful guide has been produced on this by the British Dyslexia Association).

Animation doesn't make it more interesting - It is very tempting to include lots of animation effects in presentations. These engage the audience and maintain interest - right? Wrong! Being inundated with complicated animations and exciting slide transitions can be really irritating. Use animations sparingly. Ask yourself: would this moment in the presentation be equally strong without an added effect? Does it unnecessarily delay information? If the answer to either question is yes, or even maybe, leave out the effect.

Practical sessions

A practical session is one in which your audience are predominantly 'doing' something. It will mean you talk less but you will have to lead more.

Practical sessions or activities could range from 60 seconds to 60 minutes (or longer) depending on the setting and can be a great way for people to find out about things in a very memorable way.

The benefit of practical sessions is high but so too is the effort and time needed to design and prepare them. When choosing to run a practical session you need to think about what is to be explored or learnt, how that will be done and what process does the participant have to go through? When you know what you want people to learn and how you might get them to do that practically you need to go through the whole process and assess it for timing, health and safety, cost of materials, how many people are needed to deliver it etc.

Practical session example: Beat that stat!

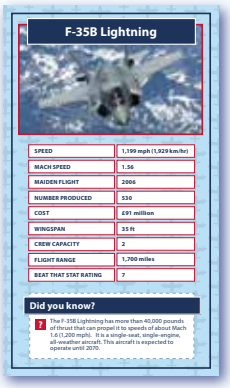
Beat That Stat! is a great activity for a practical session. This activity is a card game full of facts and figures. Each 'team' of players (usually pupils playing in up to 4 pairs) tries to win the most cards by having the highest value statistics ('stats') to beat those of their opponents.

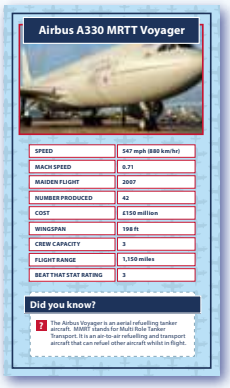
Each of the 43 playing cards has information relating to an aircraft that has been utilised by the RAF at some point. Each playing team chooses a particular information source (or 'stat') at random, from the card. Each 'stat' is read out by the teams. The winning team for that round is the one with the highest or largest value on their 'stat'

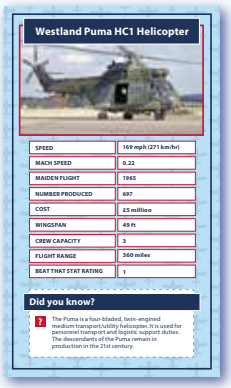
This is a great, competitive game for pupils to play. It allows volunteers to provide additional information about the aircraft; as well as providing contextual and historical information about aviation and the RAF.

Want to know more?
Access the resources here.

Beat that stat session pack





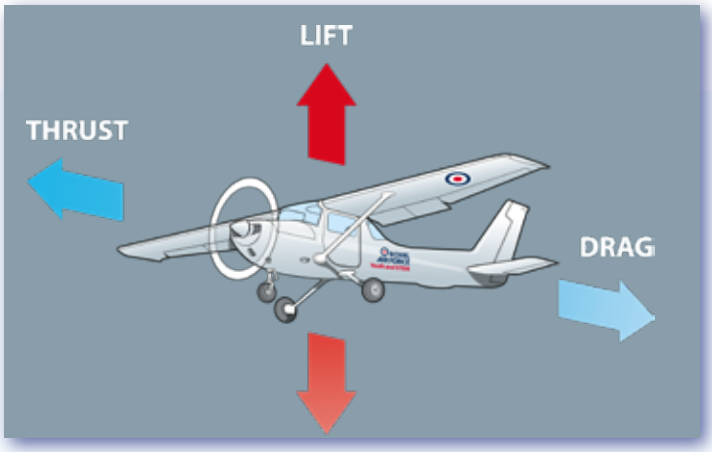


Workshops

For the purposes of this guide we are describing a workshop as something that's a mixture of a presentation and a practical session.

You might do an introduction presentation for 15 minutes and then a discussion followed by a short hands-on activity to get a feel for what was in your presentation. Workshops are great for inclusivity as they provide more than one method of learning which is great for many sorts of learning styles.

The mixture of methods and activities requires you to think carefully and plan what you are going to do. The more parts to your outreach the more chance you have of things not going as you planned.



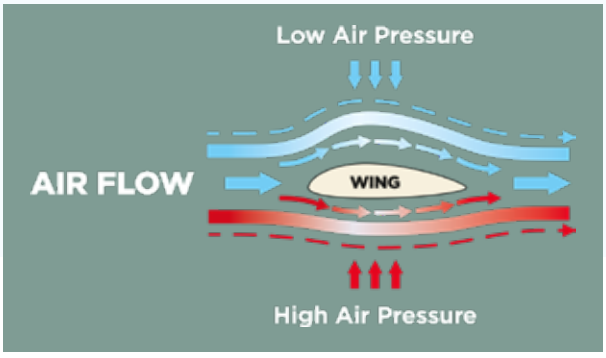
Workshop example: theory of flight

These resources form part of a suite of activities produced by the Royal Academy of Engineering for the RAF. They discuss the science behind making aircraft fly, as well as the fundamental forces that enable them to move at speed, land and take-off.

Materials include interactive elements and group work to enable participating students to engage with the content in an inclusive and hands-on way. The content has been designed to supplement science curriculum coverage in school.

Want to know more?
Access the resources here.

Theory of flight



Quizzes

Quizzes or the use of random quiz questions in your activity can be a great way to create interactive opportunities to help with learning and understanding. If you are using quiz questions think about how likely it is that your audience will know the answers. If you think there's a good chance then you can have an 'open' answer, where participants don't get any clues. Alternatively you can provide multiple choice answer options. Three or four options is usually about right. Ensure you pitch the questions correctly, a bit challenging but possible to answer.

Not only are quizzes fun they are also an enjoyable form of learning as they don't feel like traditional education. Quizzes can help students with new and existing knowledge.

Quizzes example: Headstart into healthcare

Headstart into Healthcare brings together a number of online resources, designed to inspire the next generation of healthcare professionals. Funded by the Office for Students, these resources help inform young people from all backgrounds about careers and routes into Adult Nursing, Mental Health Nursing, and Cardiac Physiology, as well as other healthcare professions.

An integral element of the resources produced by the University of Leeds for this project, were a number of structured quizzes focusing on specific healthcare careers routes. Each explored entry routes and qualifications, as well as contextual information about jobs and career opportunities. They provide a useful mechanism for pupils and facilitators (teachers or others) to engage in discussions and conversations about particular career routes.

Want to know more?
Access the resources here.

Headstart into Healthcare

Handouts

Whether you are using handouts as part of your activity or leaving them for people to take home there are a number of elements of good practice to include. Always make sure the handout uses a clear font, is laid out well and has a clear explanation. Any images should have permission to be used and should support the content. If using pictures of people ensure you have permission (if not, then only use photos where the person remains unidentifiable – backs of head, hands only etc.) and always remember to ensure there is diversity amongst the people you have included.

Videos

Using video clips can be a great way to highlight a point you are trying to make or provide extra detail. You need to think carefully about what videos you use and how you access them during your activity. Videos can be referred back to at a later date.

Using homemade videos, as part of your outreach delivery, is a great way to enhance your content. Making clear and useful videos is not easy, but is not as hard as you might think. There will be a steep learning curve, but once you find software or a method you are comfortable with it will get easier. The key to using a video is to make sure it covers the content, that it is clear and understandable, that it is only as long as it needs to be and needs to be of good visual and audio quality.

Primary School Activity Video

As part of a project to enage with Primary Schools, the RAF commissioned the development of a suite of activities suitable for youngsters to complete in school or elsewhere. To support delivery of the materials a number of short 'explainer' animations were produced which introduced the activity to the pupils and helped to provide additional context around the activity.

Want to know more?
Access the resources here.

Primary Activity Book Online Animated Activites

Pre-existing materials and activities

Using activities and materials that have already been made is a great way to save yourself time and effort, and it's also a great way to learn what you need to prepare and think about in terms of doing outreach or public engagement.

When using pre-existing materials you want to make sure that they are suitable for the age and background of your audience, that they fit the time you have available for delivery but also, importantly, that you feel comfortable using them. It is never advisable to use a pre-existing activity without preparation and reviewing how it all works, the steps involved and what you need to bring or prepare to make it work.

Freely downloadable resources focusing on a range of STEM-based topics are available from the RAF Youth and STEM Team's resources portal. Materials are available for primary and secondary students to use in the classroom or at home. Activities include: coding, rockets, investigate, design & build, cyber, and virtual experiences.

RAF Youth and STEM resources

The RAF Youth and STEM team have created a resources site that is freely accessible. Materials are designed to engage primary and secondary students to use in the classroom or at home. Activities include: Coding, rockets, investigate, design & build, cyber, virtual experiences and many more. You can search activities and resources by type of activity and age group of learner.

Want to know more?
Access the resources here.

RAF Youth and STEM resources

Stall or Table activities

Public engagement activities, or large events for schools can require you to have a stall at which participants engage with you. It might be a stand of people to talk to, information to take away, a demonstration, a hands-on activity, or a combination of all of these things. There are no rules for what you should do with your stall (other than health and safety issues). But when designing it's important to think about the three stages of engagement you might have – from afar, close up and at the table – and how people interacting at any stage can take away the essential information you want to share.

From afar are those people that stop or pause in front of your table but are far enough back that it is clear they just want to look, and not actively engage. Clear signage of what your table or stall is about helps to either entice that person closer or walk away with the basics what is going on.

Close up are those people that come close to the table, may want to talk to you but aren't fully engaged with what's on the table. You might plan for there to be more detailed signs, posters, leaflets to take away, or you may want colleagues to verbally engage with these participants and let them ask questions.

At the table refers to those people that want to find out more, get fully engaged and have a go at any activity or demo you have. If providing a hands-on activity you might set up specific spaces for them to do so, marking out on table 'areas' for the hands-on activity to take place. Remember though, not everyone will start this at the same time, nor will they take the same amount of time to complete it so planning how you will manage these interactions is important. Consider what instructions will they need, does the activity need resetting, how will you deal with questions. The key to having a table is how you will manage the various interactions and not having so much going on that you cannot manage without being pulled in too many directions.

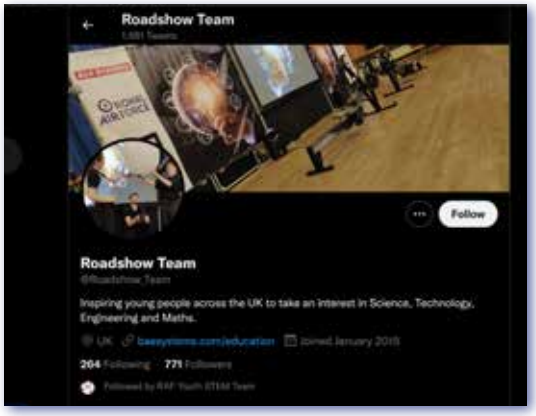
A great example of a simple to run activity, that uses resources that are easy to acquire (a single piece of A4 paper), is the 'Whirlybird' challenge on the RAF Youth and STEM site. This activity is ideal for a stall or table activity, it was designed as part of the 'STEM at Home' materials produced by the RAF during the lockdown period of the Covid-19 pandemic. The activity shows participants how to make and fly their very own Whirlybird.

Demonstrations

A demonstration can often be a great way to explain something technical or interesting without having to rely too heavily on a carefully prepared workshop or activity. The level of detail will vary according to the content of your demonstration. For example, using a model car in a wind tunnel to demonstrate airflow doesn't need as much planning as a demonstration that requires a mix of chemicals to show a reaction. With the wind tunnel, once turned on it can be left on and you can talk about it as and when people come to take a look. With the mixing of chemicals however you can only do the demonstration as many times as you have the chemicals for, plus you need to consider what happens to the used chemicals, storing the unused ones, making sure people don't touch the mix etc.

Often with demonstrations that cannot be turned on, and left on, it's best to provide a schedule for when you will start each new demonstration and make sure people know about it. For example, if your demonstration takes ten minutes you may want to schedule one every twenty or thirty minutes so you have time to set up before and after each demo.

A good example of a demo-style event is the Schools Roadshow series of events supported by BAE Systems, the RAF and the Royal Navy. Each year, this roadshow provides interactive demonstrations to large groups of pupils in a theatre-style session. During each year of the programme, the delivery team visit hundreds of schools and engage with thousands of students in STEM-based activities.



Busking

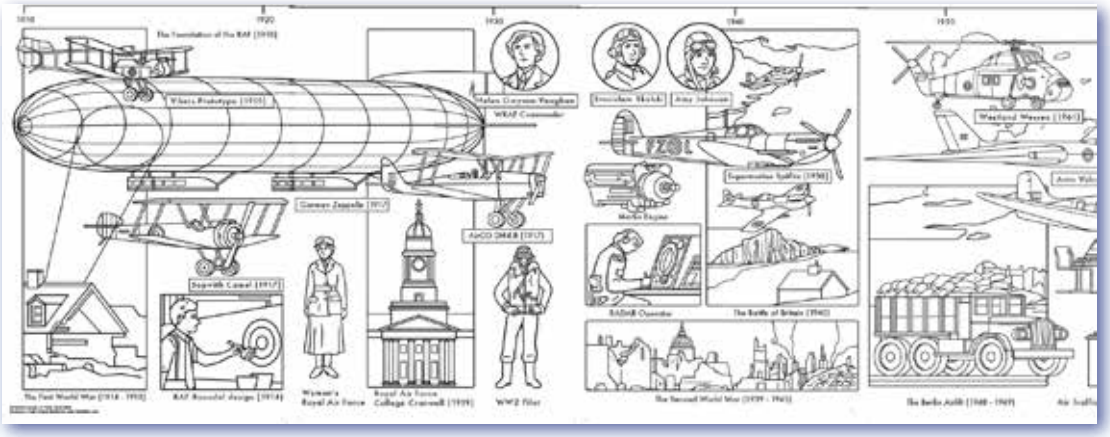
Non-music busking is a thing! Often used in public spaces such as shopping centres, high streets and stations, some public engagement activities use a form of busking to engage with a random audience. To take part in a busking activity you will need permission from a council or manager, then you need to decide what you are going to do. It could be as simple as speaking to anyone that will stop and listen, or you might have things to show people or even something to demonstrate. Whatever you plan to do it's important to remember that you won't have a 'base' – no table or stand, so everything you need has to be with you the whole time you are conducting your engagement. This means that unlike a stand or stall type activity, the main reason for people to stop will be you. So make sure the purpose of what you are doing is clear. Clear signage or an outfit with logos can help you look more 'official' and therefore it is likely more likely that people will stop.

Examples of this type of engagement work include the RAF colouring wall used very successfully in public spaces to engage audiences and explore the history of the Royal Air Force over the last 100 years.

RAF colouring wall

A set of line drawn pages depciting the history of the Royal Air Force during its first 100 years.

Want to know more? Access the resources here.



RAF colouring wall

Top tips for effective public engagement

- Be clear about why you are engaging with the public, both in your own mind and in your communication with potential participants.

- Allow enough time to plan public engagement thoroughly, whether it is a small, one-off event or a sustained programme.
- When planning your public engagement strategy, consider who you wish to engage with and why, their interests and why they might be interested in your research area. This will help you choose a suitable approach.
- Consider your own preferred communication styles and skills. Your activities will be far more successful if you are comfortable delivering them.
- Developing an activity timeline or Gantt chart will help you manage the public engagement activity and identify potential pitfalls.
- Think about your public engagement role as one that is ongoing. This will allow you to connect your activities, build your expertise and develop a rapport with the groups you are engaging with.
- Build evaluation in at the start of the public engagement programme. Evaluating the experience or activity is the only way to learn what works.

CHAPTER

3. Working with audiences and participants

In this chapter we discuss:

- Working with secondary schools
- Working with primary schools
- Working with Special Educational Needs and Disabilities (SEND) pupils
- Working with community groups
- Working with the public
- Managing risk
- Risk assessments
- Safeguarding considerations
- How to reach and engage with 'difficult to reach' groups

Working with secondary schools

The good thing about working with schools is that you have much more knowledge about the parameters you need to work to. You'll know how long you have, how many pupils, audience age and background, and anything you are not allowed to do or use (usually for health and safety reasons). This knowledge means you can plan your activity with greater ease.

When planning on doing an activity in a secondary school here are some things to consider:

Curriculum mapping - to ensure maximum impact, the activity you provide must add value to the studying content of the pupils. Schools will welcome the opportunity to work with you if you can help them to make a dry subject interesting and engaging. You shouldn't be expected to precisely map your content to the standard curriculum (these differ in scope and definition in each of the UK nations), but adapting your content to fit each curriculum specification is useful and shows your support to the school. Many providers, including RAF Youth and STEM, Royal Academy of Engineering, CREST Awards, map their content to the curriculum.

Timing - you'll get a clear start time and end time (and usually an arrival time). Make sure you stay within the time frame. The usual trick is to wipe off 3-5 minutes at the start and 3-5 minutes at the end for general noise and settling in. The remaining time is for your entire activity.

Content - you want to make sure your audience is engaged throughout. For long sessions, you could have a set of smaller activities that require different skills or tasks.

Language - make sure your language is appropriate. It is easy to say things like 'right guys' when addressing a mixed gender class or 'come on kids' when talking to 15 year olds but you want to make sure you are always inclusive. Being aware of your casual and informal language is a way to make your delivery better.

Top tips for working with schools

The National Coordinating Centre for Public Engagement has produced some useful advice on how to effectively work with schools when seeking to deliver outreach. These top tips include:

- Do your homework - schools have a number of conflicting priorities so you will need to have thought about how your activity is relevant to the school curriculum and how it will enrich their existing activities
- Plan ahead and communicate – meet with the teacher beforehand to discuss your ideas as they have lots of expertise and will know the pupils well
- Manage expectations – be clear about what you and the school want to achieve and how you will go about this. You should also make sure that your Supervisor or Head of Department is aware of your activity if this is appropriate
- Evaluate and get feedback – by arranging a short debrief session with the school so that you can improve your activity next time, and others can learn from your experience. In fact, when planning your activity it can be useful to ask what others have done
- Have a go – and make sure you take advantage of all the available help and support rather than re-inventing the wheel.

Working with primary schools

Much of the guidance for secondary schools will apply to primary schools. However, primary school teachers are rarely specialists (for example in particular areas of science), they tend to be excellent all-round teachers. Often, invited speakers in a primary school are supporting the delivery of a specialist part of the curriculum. A good example of this is the coding content that is covered as part of a primary school's Code Club. Teaching coding as a primary school teacher can be a daunting task, however utilising Code Clubs (an excellent national organisation with thousands of volunteers supporting coding in schools) adds value and makes their lives easier.

An additional point to note when working with primary schools is how you explain what you do and what your industry does. Come prepared with analogies and other ways to explain things for a younger audience. Always try to think about what they will already know or have experienced. Making explanations relate to their world makes your message stick a lot better.

Do's when working with audiences and participants

- Know your parameters - find out who will be attending, how many and how long you have. If there's an organiser find out what you can and cannot do.
- Get your words ready – What do you want to say and how are you going to say it? What bits needs specific explanation and how can you explain it in a way the audience will understand?
- Get your kit ready – Do you need 'things'? How many do you need, what instructions do you need, have you got enough, do you need spares?

Working with Special Educational Needs and Disabilities (SEND) pupils

The great thing about working with SEND students is that you'll get even more background information about the people you are going to work with and it's likely the group will be smaller so easier to manage. When working with SEND pupils make sure you discuss with the teacher the needs of the pupils in the room and explain to the teacher what you plan to do so they can tell you if it will work. The key thing with SEND pupils is the communication with the teacher.

Working with community groups

Community groups, a bit like schools, will likely be a selective group of people so you will be able to get some background information about who you will be interacting with and the kind of things they do or don't know. Utilising many of the same elements as you would with schools will, generally, set you up well for working with community groups. Community groups come in many shapes and forms and you should take account of subtle and more fundamental requirements in terms of the delivery approach you might adopt. A faith-based community group may require a different delivery method to a scout group or Womens Institute group, for example.

What about the impact of COVID on outreach?

This research work carried out by the University sector's public engagement professionals identified that during 2020 and 2021 engagement and outreach work moved much more to online ways of working. This included delivering activities from home and working collaboratively with other outreach providers.

Want to know more?
Download the full report here.

The experience of Public Engagement Professionals during Covid-19

Working with the public

Where working with schools allows you to plan and know what to expect, working with the public is the opposite. In a genuine public event (in a shopping centre for example) you may have people of all ages and backgrounds engaging with you for thirty seconds or ten minutes (or longer). You have no control. The best way to manage public interactions is preparation. Have the right equipment ready, and enough of it. Have explanations worked out in the simplest form, then a more complicated version and then almost the real thing. As you talk to people you will be able to work out what level to use but having the explanation levels already prepared will make that decision quicker and easier. Although you have a plan and talking list for your engagement it is likely that some deviation will happen as you respond to questions and conversation with different people. You don't have to answer everything so before your event if there's anything you can't or don't want to talk about make sure you have a polite sentence ready if you need it.

Managing risk

When delivering engagement or outreach work with the public or schools it is important that we consider the risks associated with the activity. These apply to those delivering the activity, as well as participating members of the public or schools. Schools and community organisations will require that an assessment of reasonable risks has been carried out before the activity takes place. The school or community organisation will undertake this assessment (if the activity is delivered on their site), but they may need to consult with you in relation to the detail of the activity to ensure that all reasonable risks have been considered.

Risk assessments

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 is a critical part of planning any public engagement activity. It can be a useful tool to ensure that you are targeting your activity to your audience and in many cases it can be a requirement of your insurance company. A risk assessment is not about creating huge amounts of paperwork, but rather about identifying sensible measures to control the risks.

The Health and Safety Executive have produced a guide to controlling risks in the workplace, this includes general information for anyone delivering outreach work that includes working with the public or schools.

Elements to consider when constructing a risk assessment

Activity focus When developing a risk assessment, you should begin by thinking about everything that you are going to be doing. A method statement to help identify potential risks. A short document explaining what you are going to do for the activity. It explains what equipment you are going to use and what the participants will do. This is also useful if you are planning 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 are planning to do and how you are minimising possible incidents. It is worth checking the health and safety requirements of your venue. They might have a particular form that they would like you to use.

Review each time It is important to review your risk assessment every time you run the activity. It reminds you of the precautions 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 have identified and what they should do to minimise them. You should share your risk assessment with everyone involved in the delivery of the session.

Common hazards Most hazards that are present when delivering outreach or engagement work can be avoided or minimised with a little thought and planning. This includes making sure that there are no trip-hazards, supervise participants if they're using particular equipment (such as scissors or heavy objects), and warn participants about potential obstacles that may be present in the venue.

Example risk assessment processes and procedures

The National Youth Agency has produced an excellent guide to the process of managing risk in publicly-facing outreach work. They provide structured notes focusing on the factors to consider when working with community groups or youth organisations. This guidance is relevant for all outreach and engagement work.

Others have also produced example risk assessment templates and guidance notes. These include the booklet produced by The Institute for Volunteering Research and Volunteering England who focus on risk management in relation to volunteers. Their handbook carefully explains the risks associated with volunteering and outreach work and proposes strategies for dealing with them.

Risk Toolkit: a guide for organisations

Written for the voluntary sector, this guide seeks to demystify risk management. It discusses practical actions that volunteers can carry out to mitigate risk and create experiences that are enjoyable and risk-free for all.

Want to know more?
Download the full report here.

Risk Toolkit: a guide for organisations.

Safeguarding considerations

There are usually specific processes and procedures in place when working with children, young people and vulnerable adults. Most host organisations (including schools and community organisations) will have mechanisms in place to protect the safety and well-being of activity participants. Usually this will include a requirement for those involved in the delivery of the session holding a valid Disclosure and Barring Service (or DBS) certificate. These documents help organisations make safer decisions about the deployment of volunteers for outreach and engagement events. They detail 'disclosures', criminal records linked to a volunteer, and therefore prevent unsuitable people from working with vulnerable groups, including children.

DBS certificates for volunteers are free of charge but require individuals to apply, usually via a recognised voluntary programme – such as the STEM Ambassadors programme. It is a simple process to become a STEM Ambassador. You are required to complete an online application and attend a short induction session (online or face-to-face). The STEM Ambassador programme team will take you through the process of applying for your DBS certificate.

Most major employers will also be able to provide further guidance on securing a DBS for any voluntary work you may wish to engage with. There are four levels of DBS certification. These are basic, standard, enhanced, enhanced with barred lists. When carrying out outreach or engagement work with young people, most organisations require volunteers to hold an enhanced DBS certificate.

How to reach and engage with 'difficult to reach' groups

The Royal Academy of Engineering has summarised work by others who have successfully worked with under-represented groups. Their top tips for engagement include:

- Research your participant group to identify: their needs, values and interests. You should pay particular attention to cultural, social, personal and practical barriers to their involvement. Make sure that everyone working on the engagement activity understands the needs and interests of your participant group.
- Try to involve the participant group in the planning, development and delivery of the activities. If you are planning to run a co-creation project it is important that you are clear about the extent to which participants will have control over the content. Develop content that is relevant to the cultural heritage, daily lives and interests of the participant group.
- Develop activities that provide opportunities for shared social experiences with friends or family and active participation. Ensure that activities can involve extended families and intergenerational learning if possible.
- Address geographical barriers due to lack of transport or unwillingness to travel to unfamiliar locations (e.g. run activities at locations your audience are already familiar with and can easily reach). Similarly, address financial barriers to participation (e.g. discount tickets, subsidised transport, locations close to where the audience live).
- Work in partnership with trusted 'gate-keepers'/ambassadors (youth workers, coaches, club leaders, places of worship, community groups) who understand the needs and interests of the audience. Promote through trusted sources of information (e.g. the trusted 'gate-keepers', local or specialist media). Ensure language and imagery effectively illustrates what the activities will involve e.g. shared social experiences, active participation, content that is relevant to their interests, accessible location etc.

Want to know more? Access the resources here.

Strategies for reaching underrepresented audiences

CHAPTER

4. Planning your outreach and developing your skills

In this chapter we discuss:

- Structuring sessions with schools
- Top tips – scheduling outreach in schools
- Structuring sessions with the public
- Further sources of support

Structuring sessions with schools

There is a lot to consider when delivering a session in a school. Teachers will be able to provide support and guidance on appropriate style, curriculum links, interests and expectations from participating pupils. We've drawn up a list of questions you will need to take into account to help you to deliver a successful engagement activity. These are:

- What is the age group?
- How big is the group I will be working with?
- How long do I have?
- Background from the teacher (including relevant curriculum links)?
- What is my key message?
- What type of interactions do I want to use in the time?
- What is the order of interactions?
- What kit or tools will I need?
- How much equipment will I need (including spares)?
- What other things might I need to check before arriving at the school?

Look at the example below, taken from a real engagement activity. We have included the thoughts and reflections that helped to shape the planning for the event.

Question: What is the age group?

↓

Year 6: 10 & 11 year olds.

MY THOUGHTS: Ideally I want pupils to sit in groups but I'm flexible on how many in each group as long as they are similar in size.

Question: How big is the group I will be working with?

↓

One class – maximum 31 pupils.

Question: How long have I got?

↓

1 hour 10 minutes between assembly and break.

MY THOUGHTS: This really means 1 hour as I'll lose about five minutes at the start for them getting settled and we'll need five minutes at the end to tidy/finish up before they go for break.

Question: Background from the teacher?

↓

Pupils knowledge of engineering is limited to car mechanics and the person that comes to fix the boiler.

MY THOUGHTS: The session should focus on the design, problem solving and innovative aspects of engineering, covering the full breadth of possibilities if I can.

MY THOUGHTS: I'll make sure I ask the teacher about what they are currently studying in this area (linking what I'm doing to any specific elements of their curriculum if I can.

Question: What is my key message?

Engineering is in everything and engineers are creative problem solvers that help people and the planet.

MY THOUGHTS: I don't want to just talk for an hour so I'm going to do a couple of different things in the time I have but I will make sure there is an interactive element at least every 4–5 minutes. Quiz questions distributed throughout the presentations and the hands on activity at the end should do the job!.

Question:
What type of interaction or interactions do I want to use in the time?

Introduction to me (talking)
Introduction to engineering (talking)
What is engineering? (talk with interactive quiz questions). What is it? (examples of engineered items for pupils in groups to guess what they are).

Question:
What is the order of interactions?

Introductions – no more than 10 mins
What is engineering? – 15 mins
Pupils to ask questions – 5 mins
What is it? – 15 mins
Answers to what is it – 10 mins
Pupils can ask questions – 5 mins.

MY THOUGHTS: Let me put some question opportunities in the plan. If I'm running over with the previous item I can reduce the question time. If no one asks a question I will have a few more quiz questions ready to use.

Question: What kit or tools will I need?

Slides to support my introduction.
Slides to support 'What is engineering?'.
Set of quiz questions to include in slides.
Engineered items to use as examples.
Answer sheet for engineered items.

MY THOUGHTS: Must make sure that my slides are very visual, only essential words and lots of good images. And images of people will be checked to ensure there is diversity and a lack of stereotypical looking images (everyone wearing hard hats for example).

Question: How much stuff will I need including spares?

10 x engineered items.
10 x answer sheet.

Question: Other things to consider?

Classroom management?
Evaluation? Prizes? Take away?

MY THOUGHTS: Does the teacher have a specific way of quietening the pupils? Clapping hands three times, raising one finger etc.? Do I need or want to do specific evaluation or can I just get what I need from the teacher? Can I give out prizes, what type of thing should they be or not be? Is there anything I can leave with the class or the teacher for them to find out more at a later date? Resource, link to website etc.?

Top tips – scheduling outreach in schools

- Give schools plenty of notice of events, a term in advance would usually be the minimum. A number of schools now determine their whole calendar year in advance, so repeat events that are easier to timetable get better and more consistent attendance.
- Link your content to the curriculum (curriculum mapping) - try to be flexible to support this, it adds value to what the teacher does elsewhere with the pupils.
- In secondary schools it can be a little easier to book outreach events near Christmas, when the timetable becomes a little more relaxed.
- Booking science or technology-related outreach events (even broadly defined) around National Science Week in late March works well in schools and is also a popular time for community engagement work.
- Most schools relax their timetabling towards the end of the Summer term (July-time) so this can be a good time to organise larger-scale outreach events for whole year groups for example.
- Avoid hectic or pressured times in schools, which include early September (where timetables and curriculum content might not be fully established). Also it is useful to avoid key exam times such as January for some A-level programmes, May for primary school SATs, and late May and June for Higher and GCSE exams.

Taking advantage of employer supported volunteering

Employer-supported volunteering is where the employees of an organisation take paid time off to volunteer during work hours. Employees can choose to use their volunteering time to support a charity or community group of their own choice, or to take up an opportunity provided by their company. The Chartered Institute of Personnel and Development have developed a guide on this for those interested in using volunteering for professional development purposes.

Want to know more?
Download the full report here.

Employer-supported volunteering guide

Structuring sessions with the public

As with other groups, there is a lot to think about when delivering an activity with members of the public. We have drawn up a list of questions you will need to take into account to help you to deliver a successful engagement activity. These are:

- What is the topic of the event?
- Where is the event?
- What is the style of event?
- What requirements do I need to meet?
- What is the main aim of my part of the event?
- What do I want to convey?
- Who else is involved in my part of the event?
- How many people are helping?
- What type of interaction or interactions do I want to use in the time?
- Am I covering the three points of engagement?

  Point of Engagement 3: From afar

  Point of Engagement 2: Close Up

  Point of Engagement 1: At the Table
- How will I manage the interactions?
- What will I need?
- Logistics
- Health and Safety

Look at the example below, taken from a real engagement activity. We've included our thoughts and reflections that helped to shape the planning for the event.

Question: What is the topic of the event?

↓

Engineering

MY THOUGHTS: Great! No need to worry about rain or wind.

Question: Where is the event?

↓

Indoors. Large hall.

Question: What is the style of event? What requirements do I need to meet?

↓

Market place-type event with different engineers each having a stall or table to demonstrate or showcase their area. The public will wander round freely and in their own time.

Question: What is the main aim of my part of the event? What do I want to convey?

The engineering design process. How the design of engineered items impacts their use and reuse.

MY THOUGHTS: I've got some help so I can make my At Table activity a bit more complex as I will be able to ensure there is someone to give instructions as well as speak to people who are not doing the table activity.

Question: Who else is involved in my part of the event? How many people are helping?

Me. Plus three others.

Question: Covering the three points of engagement?

How will I do this?

Question: Point of Engagement 3: From afar?

Clear title and description of what the stall is about which can be seen from 2m away either using a poster board behind or sign on the table.

MY THOUGHTS: I need people to see what this is about even if they don't come to my table. The content needs to be clear and use language that non-specialists will understand.

MY THOUGHTS: Some people want to know more but not the activity so I can allocate one of the helpers as a wandering team member to speak to people about the content away from the At Table activity.

Question: Point of Engagement 2: Close Up?

See more details about the purpose of the activity and enable people to ask questions about what they are looking at.

Question: Point of Engagement 1: At the table?

Hands on activity that demonstrates the importance of the design of things in engineering. Two or three 'places' for more than one person to take part at a time.

MY THOUGHTS: I'm going to set up specific places for people to take part in the activity. It will help manage how much kit I need and I can make sure that people can take as long as they need to work through the activity.

MY THOUGHTS: I have enough helpers to cover all the engagement aspects and also make sure everyone has some downtime. It's exhausting talking and explaining so everyone will need some time to not have to talk!

Question: How will I manage the interactions?

One person: manage the at the table activity – explain the rules and reset the kit. One person: Standing to the side to talk to and answer questions from those who are close up but not taking part. One person: Extra support for At The Table or Close Up interactions. One person: Restocking, tidying, on break - not engaging. Rotate roles throughout the day.

Question: What will I need?

Poster/sign for behind the stall. Table signage and perhaps tape to mark out the activity 'places'. Kit for the At the table activity, including spares. Take aways.

MY THOUGHTS: If I mark out the places to do the activity with tape it will help manage the stall. And I can add signage on the table to show instructions but also websites or social media that people can look at to find out more information.

MY THOUGHTS: Make sure it is easy to move from transportation to hall so use a greater number of smaller boxes rather than a smaller number of large ones. A fold out trolley could be useful here. And working out parking if I need it.

Question: Logistics?

Prepare and pack up the kit.
Setup and takedown days and times.

Question: Health and safety?

Have I made sure everything is health and safety compliant?

MY THOUGHTS: Looking back through the whole plan have I got or planned anything that might cause a health and safety risk? Any potentially dangerous equipment or materials? Any cables that might be tripped over? Anything that might fall? I need to think about this from an adults perspective but also a curious toddlers perspective and then how can I make sure these things don't happen?

Top tips for planning an outreach session

- Before you design your activity it is important to think about what you want to do and who you want to engage. Think about your audience. Which age group (or key stage) do you want to target? What kind of activity do you want to run?
- Make early contact with the school to discuss expectations and to share ideas. Give the school as much advance warning as possible. The school calendar is strictly timetabled and the teacher may want to schedule you for a time when they have an 'off-curriculum' session or when you can support the teaching of a particular topic. You might be able to support a special project week.
- Ensure that you have considered the curriculum and can add value to the teacher.
- Remember to think about any risk assessments required and find out whether you need a DBS (Disclosure and Barring Service) check. These can take a few months to organise so don't leave it until the last minute.
- Find out what the pupils are currently studying that is relevant to your subject – it will give you an idea of their background knowledge and how to pitch your activity at the right level.
- What is the most appropriate language for that age group? Be careful to avoid jargon.
- Remember that there are different styles of learning and that pupils will have different abilities and interests, so plan for this by including a range of activities (let the teacher know that you have thought about this - teachers are increasingly required to record the range of personal, learning and thinking skills of different classroom activities).
- Be interactive and imaginative to get the pupils involved – the more hand's on the better!
- Motivate your audience by linking your activities to the real world and encouraging pupils to make their own discoveries. In discussions, open questions tend to lead to more interesting answers.

- It is not just what you do that is interesting – you are interesting too. Share stories about what it is really like to do what you do. Drawing upon your personal experiences will be all the more engaging.
- Find out about logistics such as the space and resources available. For example, the school might not have space for equipment, or an available budget if you want them to travel to your research institution.
- Think about what you need to take with you. Make sure you have enough handouts/worksheets and that you have sourced any equipment or consumables required for your demonstrations. It would be a good idea to find out what equipment the school can provide (you might be surprised at what they have in the store cupboard. Be sure to provide the school with an equipment list for the technician in advance of your session).

Further sources of support

Some useful reference points for anyone interested in conducting outreach and engagement work with schools and community groups include:

The National Coordinating Centre for Public Engagement (NCCPE) has an international reputation for inspiring and supporting universities to engage with the public. Their site includes a range of resources designed to support engagement interaction and engagement work with the public and community groups.

The UK Evaluation Society has a diverse and inclusive membership of evaluation professionals, practitioners and commissioners from national and local government, the research community, consultancies and the voluntary sector. They carry out work to supports the future of evaluators by promoting and improving the theory, practice, understanding and utilisation of evaluation. They have also produced a set of useful evaluation guidelines designed to help commissioners, practitioners and participants establish good practice in the conduct of evaluation.

The Royal Academy of Engineering fund a range of programmes and initiatives to encourage interest and engagement in engineering-related activity. They have produced support materials to help projects funded by the Academy to explore impact and effect. These include a selection of tools and resources that can be used to evaluate public engagement projects.

The RAF Youth and STEM team have created a resources site that is freely accessible. Materials are designed to engage primary and secondary students to use in the classroom or at home. Activities include: Coding, rockets, investigate, design & build, cyber, virtual experiences and many more. You can search activities and resources by type of activity and age group of learner.

PART TWO

CHAPTER

5. Why do people want to review or analyse their engagement activity?

In this chapter we discuss:

- Making sure we are delivering something meaningful
- Making sure it is what pupils, schools, colleges or community groups want
- There's always room for improvement
- What you might want to know about your activity
- Things to remember when you want to ask others how you did

Making sure we are delivering something meaningful

A typical approach used to ensure we are delivering something of value is to evaluate it. Evaluation is a process of collecting evidence and reflection that will help you to understand the dynamics and effect of your work and help inform future projects or approaches. It is a valuable tool that enables you to learn from your experiences and to assess the impact of your work.

Benefits of evaluating can include:

Assistance with planning
Evaluation helps you focus on what you want to achieve, how you will achieve it and how you will know if you have been successful.
Evidence of impact
It can help measure the value and benefits of your activity and provides a record of your achievements (for you and your line manager/supervisor, delivery partners, funders).
Critical reflection
Evaluation provides a tool for critical reflection for you and the people you collaborate with, and helps improve a project.
Accountability
Evaluating can help to demonstrate whether your project is value for money which is important when reporting to funders.
Learning Evaluation generates learning that can be shared with others and inform future activities.

A driver for delivering something meaningful

Thinking about what we have delivered and considering how it could be improved next time around is something that happens all the time in education. It is part of the 'Reflective' cycle and also informs the evaluation 'how can I do this better' cycle.

This circular process begins with the activity (which is delivered), it is then assessed or evaluated (by us and others), and then we plan (again) for future delivery based on the activity and the evaluative feedback received.

Making sure it is what pupils, schools, colleges or community groups want

Thinking about the needs and wants of your audience as soon as you begin planning or designing an engagement is really important ... and it can make all the difference to whether you have a successful engagement or not.

Doing some background research on your audience before you even begin to plan your activity or event is really useful. Finding out the age group, how many there will be, what background knowledge they have about your topic, what activities have they done before, or recently. When thinking about working with schools it is often helpful to show how your activity links with the curriculum, or fits careers support materials (such as the Gatsby benchmarks). Schools welcome 'leave behind' resources that you can give them, so that they can deliver additional activities within the school day following your visit.

If you make it clear in your communication what you will do and what the expected outcomes are it will help teachers, or community groups you are working with, to know if your activity is right for their group. And if no one signs up for it then it probably indicates that you might need to rethink the activity or approach to make it something that suits the needs of your audience.

There's always room for improvement

No matter how good your activity or event has been there will always be room for improvement, tweaks you can make, other things you can try. But as well as thinking how you can make it better it is also important to remember that the difference in 90% perfect and 100% perfect may not be reflected in feedback or how you audience perceives the event. So it is not always a good use of time to aim for 100% perfection, and it is also really hard to achieve 100% perfection!

What you might want to know about your activity

The kind of things people or organisations want to know about their activities could include relatively easy to identify aspects such as number of participants, age, gender, race and other visually assessable information. There are also more complex areas you might wish to consider: how did the participants find the activity, did they learn something new? You may be interested to find out if the activity altered or changed the participants' interest in careers in a specific area.

The key with any questions is do you actually need them? We might think that the more data we have the better, because there's more we could do with it if we have it. But the truth is you are highly unlikely to use any data other than what you really need. So if your company just wants you to feed back how many participants and what age they were, just go with that. You will not use the extra data because you don't need it.

Why does it matter? It matters because the more questions you ask the longer it takes for participants to answer them. It takes time, concentration and energy and you run the risk that their memory of your activity is not the content of it but the paperwork they had to complete at the end. We'll get on to the question related information in the next chapter but at this point the two key things to remember are:

- what data do you actually need, and
- what will be the impact of this data gathering on your participants?

Things to remember when you want to ask others how you did

1. Do you really need the data?
2. How are you going to use the data you collect?
3. How are you going to gather the data?
4. What impact will gathering the data have on your audience?

CHAPTER

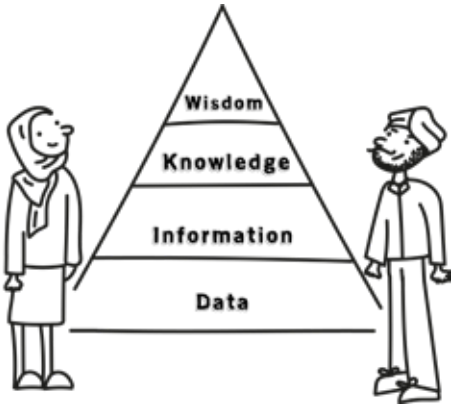
6. Dealing with feedback and impact data

In this chapter we discuss:

- Dealing with feedback and impact data
- Quantitative and qualitative data
- Questionnaires as feedback data
- Observations as feedback data
- Running Record
- Frequency counts
- Checklists
- Focus groups as feedback data

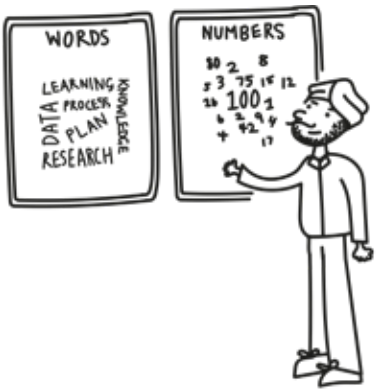
Dealing with feedback and impact data

Data is the feedback accounts, surveys, notes and observations that come before our analyses or insights.



It might be useful to think of data as fitting within a pyramid as shown on the right here. This shows **data** that we collect (the many feedback forms for example) at the bottom of the pyramid because it is unprocessed and not as valuable as it could be. The next layer, **information**, refers to the process that makes data meaningful, giving it a purpose or context (when we begin to classify the responses in the survey data for example). The third layer, **knowledge**, is produced when information is combined with understanding and expertise. And **wisdom**, at the top of the pyramid, occurs when this knowledge is put to good use.

Quantitative and qualitative data



Quantitative data

Quantitative data is numerical. Think measurable quantities such as how long, how much, how often etc. The data can be used to confirm or dis-confirm a hypothesis (a hunch about the data), or it can be used to identify relationships. Quantitative data is analysed using statistical methods and presented in tables, graphs, percentages, or other statistical representations.

Qualitative data

Qualitative data is any kind of data that describes or explains. This includes observations of an interaction, quotes from people about their experiences, attitudes, beliefs, and thoughts. It can also be represented in words, images, video, audio, transcripts, and so on.

So what is the difference?

Qualitative and quantitative data rely on different approaches to their collection and analysis. They are different in terms of the way they can be reduced or analysed, and the way they can be presented or reported. Some researchers often place greater emphasis and weight on one data type over the other. For example, in scientific work, data sources are usually quantitative when presenting messages about effect and impact. In social sciences and general outreach work, researchers and delivery practitioners are usually interested in a mixture of both data types to provide evidence of effect or impact. Quantitative provides an indicator of how many, whereas qualitative provides impact from a particular perspective (often the participant, pupil or teacher for example).

Some examples of quantitative data

- Number of students enrolled at a college.
- Trends in number of attendees at events.
- Number of outreach sessions booked by schools in a region.
- Number of pupils visiting a stand at an education fair.

Some examples of qualitative data

- A particular view on an aspect of STEM education.
- Spoken interpretation of a poster showing an engineer at work.
- The interaction of children in a workshop session.
- Power point handouts used in a workshop or activity.
- Written notes produced by pupils whilst participating in a workshop.
- Video footage of pupils presenting their work in a plenary session.

Questionnaires as feedback data

Questionnaires are useful tools for collecting data from a large number of respondents quickly and efficiently. Increasingly they are being designed online and administered via weblinks or QR codes and distributed to those involved in an outreach event or activity.

They have a number of benefits over other forms of data collection; they are usually inexpensive to administer; very little training is needed to develop them; and they can be easily and quickly analysed once completed.

An effective questionnaire is one that enables the transmission of useful and accurate information or data from the respondent to the researcher. This is a complex process which involves presenting questions in a clear and unambiguous way so that the respondent may interpret them, articulate his or her response and transmit it effectively to the researcher. Once transmitted, the answers must be recorded, coded and analysed fairly so that they accurately reflect the respondents' views.

Closed questions

Most questionnaires consist of a collection of closed questions. These are questions to which all possible answers are provided. The most often-used form of closed question is the dichotomous question requiring a 'yes' or 'no' response. For example, 'Are you a member of your school STEM club?' The respondent either is a member (responding 'yes') or is not (responding 'no').

Multiple-choice questions

Many questionnaires include questions which provide a number of pre-defined responses. This allows the researcher to hold some control over the responses given. However, the construction and piloting of multiple-choice questions usually requires careful thought to ensure that all or most responses possible are covered. A typical multiple-choice question would be: Which of the following are important attributes of a good teacher? (Please tick all that apply).

Some good closed questions to use in questionnaires

Was the activity easy to follow?
(tick ✓ only ONE)

Yes ☐ No ☐

Did you enjoy the activity?

Yes ☐ No ☐

Will the activity help with your other school work?

Yes ☐ No ☐

What do you think of your school STEM club meeting every week?

 ☐ ☐

Some good multiple-choice questions to use in questionnaires

How often do you attend your schools STEM club?
(tick ✓ only ONE)

Every week ☐
Every two weeks ☐
Every month ☐
Other ☐

What activities do you enjoy in your STEM club?
(tick ✓ all that apply)

Team-based activities ☐
Design activities ☐
Maths activities ☐
Science activities ☐
Challenges or competitions ☐

Open-ended questions

Open-ended questions impose none of the restrictions of closed and multiple-choice questions. They allow for the recording of any reply provided by the respondent. The answers to open-ended questions are in no way predetermined so this can make analysis difficult. Each response must be recorded and analysed or coded to reveal the meaning of the response. A typical open-ended question would be: 'Tell us about the area you live in?'

Some good open-ended questions to use in questionnaires

What do you think about the activity that you have just participated in? (please ✎ write your answer below)

How would you describe the activity to a friend who did not take part in it?

What was the best part of the activity for you?

Great reasons to use questionnaires

- ☑ Low cost to develop and deploy.
- ☑ Easy to get information from a lot of people very quickly.
- ☑ Respondents can usually complete the questionnaire when it suits them.
- ☑ The analysis of answers to closed questions is fairly straightforward.
- ☑ Less pressure for an immediate response.
- ☑ Respondents are usually anonymous (and therefore more honest?)

Observations as feedback data

Observation is an extremely handy tool to use when attempting to evaluate the impact of our engagement activities. It allows practitioners to understand much more about complex real-world situations than can be discovered by simply asking questions in questionnaires and interviews. This may be because respondents are sometimes reluctant to impart everything they know, perhaps feeling it would be improper or insensitive, or because they consider some things to be insignificant or irrelevant.

More than looking

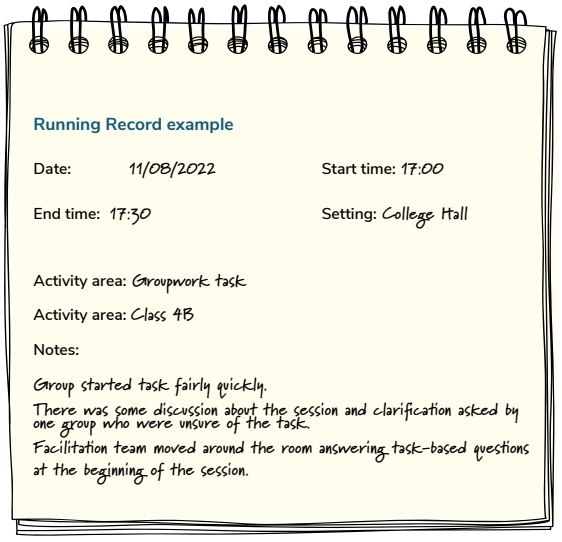
There's much more to observation than just looking. Of course looking is at the heart of all observation, but the best observational evaluators are skilled in a technique of looking in a focused and systematic way. In fact, observation involves a range of skills. Fortunately there are a number of observation devices that we can use to help structure what we are observing and how we capture the data.

Running Record

One of the oldest observation methods is called the Running Record or Informal Method. With this approach, data are collected and gathered in an loosely framed way. All you need is time, paper and a pen to gather your observation evidence. The goal with a running record is to write down everything you see and hear, exactly as it occurs, without adding any comments or attaching any opinions.

The advantages of this approach include:

- Provides detailed data about the who, what, where, and when.
- Evidence is documented as it occurs, in a sequence.
- Appropriate for gathering baseline information about the participants interests, abilities and skill level.
- Ideal for tracking a participant's development over time.
- Less structured, more free flowing.
- Evidence can be gathered formally or informally.
- Interpretations and reflections can be added later.

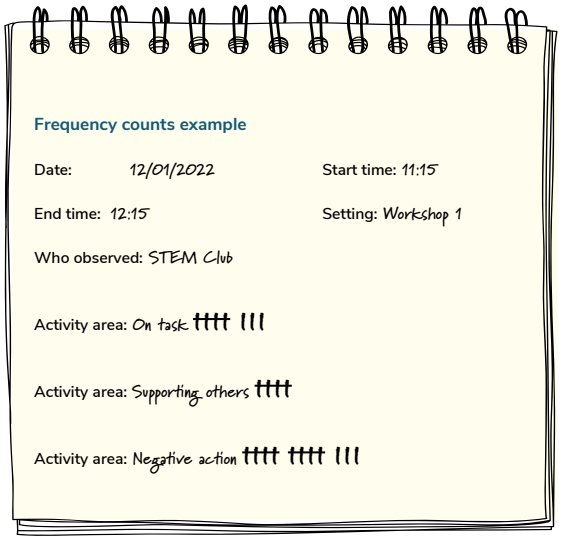


Frequency counts

A Frequency Count is an informal observation method that is used to gather information about a participant's interests, social interactions, and engagement patterns. As you observe the participants interacting, a tally mark is made every time the noted behaviour or action occurs within a set time frame.

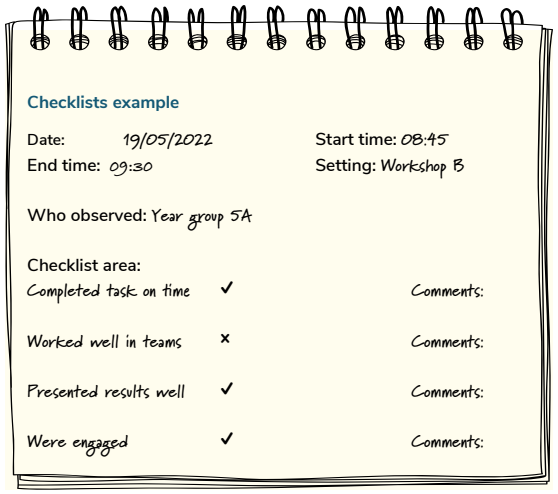
Advantages of this approach include:

- Quick and easy to use, and no training is required.
- Can be personalised or designed to gather specific baseline data (interaction patterns, supportive and negative behaviour displays, social situations).
- Provides immediate quantifiable data.
- Ideal for tracking behaviours over time and for noting an increase or decrease of incidents.
- Data can be graphed or charted to find consistent patterns.



Checklists

Checklists are an efficient and practical way to collect information about the effect or impact of an engagement event or activity. Checklists can be used in observations to 'check off' or verify that an action, event or activity has taken place. With a checklist, activity providers can easily see what a participant can do, and make notes in relation to what areas of development need further support. When creating checklists for engagement activities you may want to work with teachers or community representatives who can guide you on the areas you wish to focus on.



Checklists example

Date: 19/05/2022 Start time: 08:45
End time: 09:30 Setting: Workshop B

Who observed: Year group 5A

Checklist area:		
Completed task on time	✓	Comments:
Worked well in teams	×	Comments:
Presented results well	✓	Comments:
Were engaged	✓	Comments:

Advantages of this approach include:

- Different observers (the teacher, assistant or a support team) can check off tasks that they observe the group doing.
- Checklists are quick and easy to use, and no training is required.
- Checklists can be used in conjunction with other observations.
- Checklists highlight what has been achieved by the participant group.

Focus groups as feedback data

A focus group is a carefully planned and moderated informal discussion where one person's ideas bounce off another's creating a chain reaction of informative dialogue. Its purpose is to address a specific topic, in depth, in a comfortable environment to elicit a wide range of opinions, attitudes, feelings or perceptions from a group of individuals who share some common experience. The product of a focus group is a unique form of qualitative information which brings understanding about how a group of people react to many engagement experience.

Why use a focus group to gather your evaluation and feedback data?

- They help you to gather insight to, or raise awareness of, an issue or topic
- They can uncover complex motivations, attitudes or behaviours
- They can be used to interpret previously obtained research results
- They can help you to discern participants' needs when planning, improving or evaluating outreach or engagement activities.

Some good topics or questions to use in focus groups

How would you describe today's workshop to others?
[following a response]
Do others agree with that description or wish to add to it?

Which parts of the workshop did the group like and why?
[prompt for agreement or disagreement in the group]

Is the workshop going to make you do things differently in the future?
[prompt for examples]

CHAPTER

7. Tools and techniques to help you evaluate

In this chapter we discuss:

- Collecting formative and summative data
- Asking questions (good questions and bad questions)
- Methods to gather your feedback/data
- Measuring social value. What is it and why is it important?
- Measuring impact in the future
- Measuring science capital
- How to deal with teachers who want to provide feedback
- Feedback from parents
- Feedback from pupils
- Dealing with unplanned feedback
- Ensuring representation and the importance of equality, diversity & inclusion
- How to tell a story about impact

Collecting formative and summative data

Evaluation activity of outreach work usually follows one of two main forms. They are defined as either formative or summative in their approach.

Formative evaluation work is carried out as the outreach project or activity is being developed and/or delivered. In this way, it seeks to inform the development of the outreach or project work. It can reveal early on when things are going well. It also shows up when things are not going well and future outreach sessions in the programme can therefore be changed or adapted.

Examples of formative questions to help you evaluate

Typical formative questions asked about outreach work might include:

- Are you doing what you planned to do in the session?
- Is the activity going well/is it working as expected?
- What would participants like to do in the sessions exploring AI, and how should we re-shape our sessions in light of this?
- How do community groups respond to our activities?
- How can we adapt them to fit with local requirements?
- What do young people enjoy about our residential programme, and how can we improve events later in the year to consider their feedback?

Summative evaluation work is carried out after the completion of the activity or project. Because it is carried out at the end it can summarise the overall impact and effect of the work. Summative evaluations are therefore less-invasive on project activities (as they are carried out after the delivery of the outreach activity or event).

Examples of summative questions to help you evaluate

Typical summative questions asked about outreach work might include:

- Did you do what you planned to do in the activity?
- Was it done well?
- Did the sessions on AI increase interest in engineering and AI-related career options for participants?
- Do community groups engage with more external support agencies following their involvement in our outreach work?
- Do more young people wish to join our apprenticeship programmes as a result of their involvement in our residential and other support provision?

Asking questions (good questions and bad questions)

There are definitely good questions and bad questions. And by good or bad we don't mean that they are easy or difficult, we mean that they are asked in the right way to gather usable data (good) or they are asked in such a way as to confuse and frustrate the participant which subsequently provides you with useless data (bad).

Don't be afraid to split a question or topic into more than one question but at the same time use as few questions as possible!

The difference between monitoring and evaluation

Monitoring is the collection and analysis of data during a project and the comparison of this data against the targets and plans. Monitoring is part of project management, and helps to ensure cost-effectiveness and project progress.

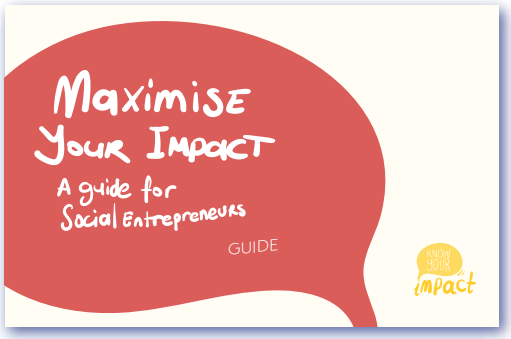
Evaluation is about making an assessment of the effectiveness and impact of what has been done. Data gathered for monitoring purposes is often utilised as part of evaluation, but the aims of the two activities are different.

Methods to gather your feedback/data

There are a number of ways to gather feedback. The best method will depend on what you want to know and what kind of data you want in return. But as long as you are clear about what you need you can get quite creative with how you gather feedback.

Simple to use methods are those that are paper based – a feedback card or a questionnaire for example. Verbal feedback with yes or no questions posed to participants is also an effective way to collect feedback. One other approach, adapted from an initiative used in some supermarkets, is to provide tokens or cards to participants. They then use these tokens to respond to questions posed about the activity, one box for a positive response (I liked the activity), another for a less positive response (I didn't like the activity).

Maximising your impact



This guide for social entrepreneurs, produced by Social Value UK, is written for those who want to maximise their positive impact and want a practical approach to explore their impact. The key to this approach is 'Impact Thinking' which means involving and being accountable to stakeholders, primarily those that the social enterprise aims to support.

Want to know more?
Download the full toolkit here.

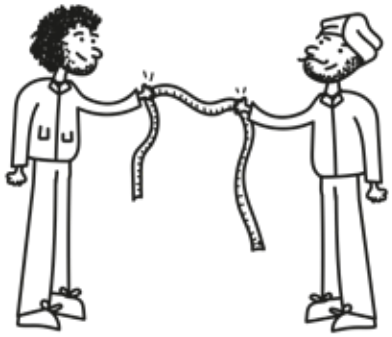
Maximising social impact: a guide for social entrepreneurs

Measuring social value. What is it and why is it important?

Social value is the quantification of the relative importance that people place on the changes they experience in their lives as a result of some action, project or activity. Some, but not all of this value is captured in general impact and evaluation work. It is important to consider and measure this social value from the perspective of those affected by an organisation's work.

Examples of social value might be the value we experience from increasing our confidence, or from living next to a community park. These things are important to us, but are not commonly expressed or measured in the same way that financial value is.

Measuring impact in the future

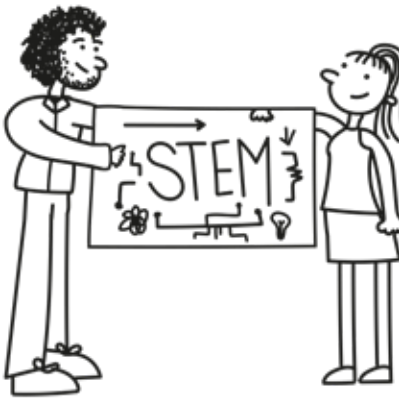


The true effect or impact of actions or interventions often only occur in the future (after your activity or outreach event). When examining impact in the future we might want to consider the following 'Impact Questions' suggested by Social Value UK:

1. What problem are we trying to solve?
2. What is our proposed solution to the problem?
3. Who experiences changes in their lives as a result of what you do?
4. What outcomes are (or are likely to be) experienced?
5. How can we measure the amount of change to the outcomes?
6. How much change in each outcome has happened (or is likely to happen)?
7. How long do we need to measure the outcomes for?
8. What is the relative importance of the different changes in outcomes?
9. How much of the change in each outcome is caused by our activities?
10. Which changes matter and are important enough for us to manage?

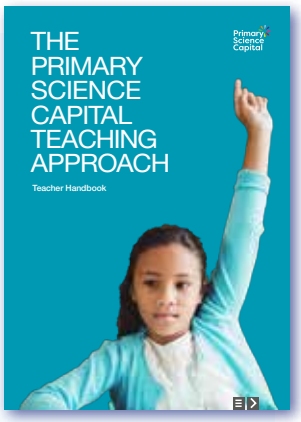
Measuring science capital

The focus for many organisations engaged in outreach work is to enhance or increase interest in a specific subject or topic. Encouraging greater interest in science and career related opportunities has long been a focus for various regional and national bodies. The argument put forward is that the greater 'science capital' an individual has, the more opportunities they have available to them. The idea of science capital provides a way to understand and organise all the science-related resources that a person may have. It is all of the science-related interests, knowledge, relations and behaviours that an individual holds.



Measuring science capital

While science can be interesting and enjoyable, evidence shows that many children experience school science as abstract, disconnected and irrelevant to their lives. This handbook (co-developed by researchers and twenty primary teachers) empowers teachers to make primary science teaching engaging and equitable. The handbook includes a set of questions that can be used to help explore and measure science capital in primary school children.



Want to know more?
Download the full handbook here.

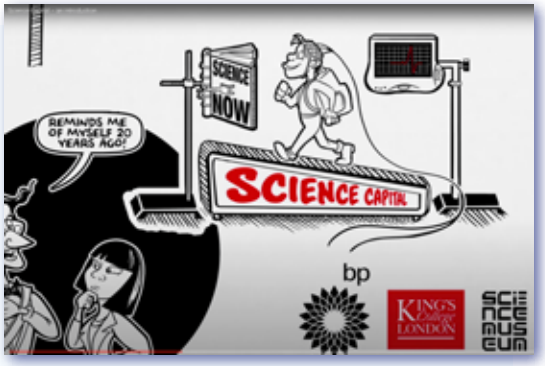
The Primary Science Capital Teaching Approach

Researchers at the University of London Institute of Education have grouped science capital into four key areas:

- What you know about science (e.g. your scientific knowledge, literacy and understanding);
- How you think about science (your science-related attitudes and dispositions);
- What science-related activities you do in your spare time (e.g. reading about science, visiting science-related places); and
- Who you know (e.g. family members with science qualifications; people who talk with you about science-related topics and significant others who encourage you to engage and/or continue with science).

Science Capital

BP, Kings College London and the Science Museum have collaborated on project work to explore the prevalence of science capital. To support this, they have produced a simple animation defining the concept and explaining its value.



Want to know more?
Access the YouTube animation here.

Science Capital – an introduction

Feedback from teachers

Getting feedback from teachers is great but may not always be possible depending on how busy they are. It is always worth being capturing any teachers' feedback, either in person or via email after your activity. Ideally you have already communicated with the teacher prior to your activity about the kind of feedback and evaluation you would like. Options for teacher feedback include asking them at the end of the session if they have any comments, asking them to give you their thoughts about it via email, or developing a specific set of questions for them to answer. It is useful to ensure teachers agree to providing you with feedback on your activity when you are in the planning stages with them. In this way, you can ensure that it will be provided.

Feedback from parents

You are more likely to have an opportunity to gather feedback from parents if doing a public engagement event rather than a school event. Feedback from parents will be very individualised. It will be based on the view of them and their children and will not represent the whole audience.

Feedback from pupils

Feedback from pupils or young people is usually the most commonly required feedback. You want to find out if your activity/event has had an impact, if the participants enjoyed it, learned from it and have been affected by it. In terms of STEM outreach we may want to know if the young person would now consider a job as an engineer, or a scientist or a mathematician in the future. Gathering feedback from pupils can easily be done at the end of a session or built into your activity but it's really important to remain clear about what their feedback can and cannot tell you and to think really carefully about what data you are collecting and what you want to do with it.

Dealing with unplanned feedback

Sometimes you might get feedback from an unexpected person or group. It may be quite informal feedback received during a coffee break or whilst other activities in the session are taking place. Often this kind of feedback provides a personal perspective on an activity and it may be very individual or unique to a specific group or situation. As such it might not be relevant and generalisable for other engagements or events.

Ensuring representation and the importance of equality, diversity & inclusion

Gathering feedback from everyone who takes part in your activity makes your evaluation inclusive. If you are unable to get feedback from everyone then it's important to make sure all participants have an equal chance of taking part.

For example, if you were running a public engagement event that involved participants of all ages you might invite every fifth person to answer some questions about it, or you might specifically ask ten females and ten males or an equal amount of people from different age ranges. This is called sampling and there are many ways of doing it, each with their own particular uses and pros and cons. If you are getting feedback from all participants then you don't need to sample, but if you only want a selection then you should consider sampling processes to ensure the data you collect is reliable and useful.

How to tell a story about impact

Jennifer Aaker studies happiness, and how stories can affect our happiness; she believes that stories are more meaningful, more memorable, more impactful, and more personal, than statistics alone. When used with statistical data, stories are an incredible persuasive tool that can help us decide what to believe in a world that is otherwise incredibly over-saturated with information. She argues that when data and stories are used together, they resonate with audiences on both an intellectual and emotional level.

Telling a story about a project has impact because it works with those who are most affected or impacted by the project (usually), its participants. Participants are those you will work with to tell the story of the project and through this you will discover its effect and impact.

Select your storytellers

Essentially, storytelling with participants (pupils, teachers, the public) will require you to select your 'storytellers'. These will be the individuals you will work with to talk through the project, what it means to them and what it has provided to them.

Help them to tell their stories

Helping participants to tell their stories can take a variety of different forms. Purists in storytelling techniques believe that the control should rest with the participant. However, as an activity provider you may want to guide the stories to your areas of interest. Tools to help collect meaningful stories include discussions around topics of interest, written material (posters, power point slides etc), video-captured presentations, feedback forms, social media posts etc.

Collecting stories

The critical part of this technique is the session is used to collect stories. These sessions should feel informal, equal, and conversational. The teller and collector should be made to feel comfortable, both physically and emotionally. A great help in these sessions is the provision of refreshments. They are often seen as an unnecessary expense, but they make people feel welcome, give people something to look at and play with, are an excuse for a pause to drink or eat, and help keep energy levels up!

Bringing a story together

Stories generate vast amounts of data from. A framework for presenting or reporting on these accounts will usually consider the following parts:

Introduction - Grab the audience's attention. This can be achieved with a powerful image or statement linked to the core effect of the project.

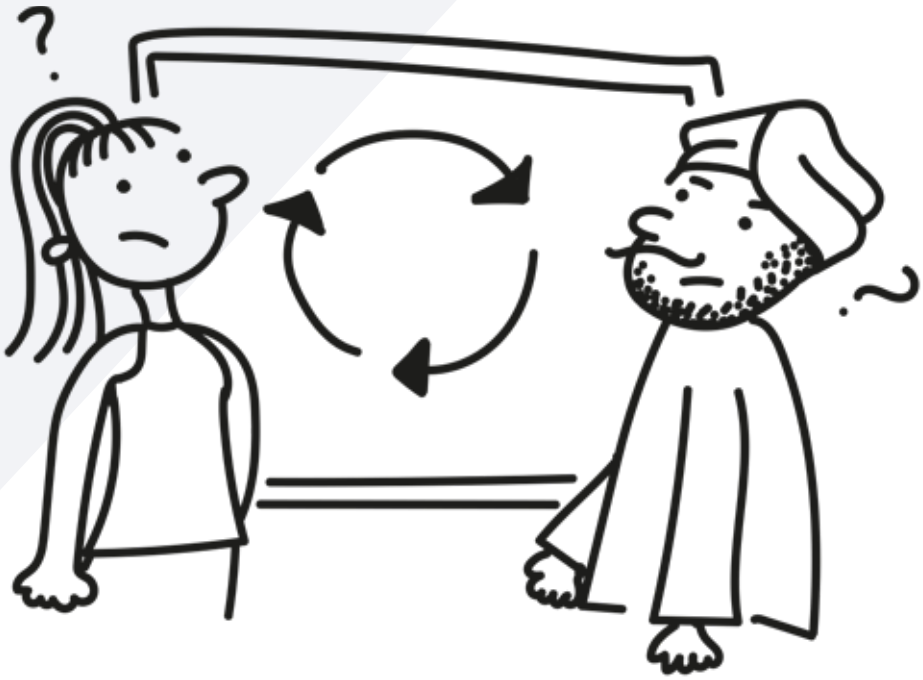
Point of view - Who are the main data sources in your story? Are you presenting your story from their point of view? This adds impact and authenticity to your reporting.

Narrative order - Your story should follow some form of logical order. This is often crafted around the chronology of the stages or parts of the project work. It is useful to begin with reactions to the project and move towards the impact and effect at the end of your reporting. The Kirkpatrick Model of evaluation (discussed in Chapter 9) is a useful narrative framework to explore reaction, learning, behaviour, results.

Language - What kind of words and imagery are important to help effectively tell the story?

Telling a digital story: Action for M.E. (Myalgic Encephalomyelitis or Chronic Fatigue Syndrome)

Raising awareness and the understanding of M.E. is a key priority for Action for M.E. Project staff at Action for M.E. were convinced that there was no better way to achieve this than by empowering people affected by it to talk about their own experiences of this illness. They devised a programme (Digital storytelling toolkit) which provided M.E. sufferers with the tools, and the confidence, to tell their stories so that it helped others to understand the impact of M.E.



CHAPTER

8. Planning your evaluation and learning from it

In this chapter we discuss:

- Evaluation – working out what you want to do before the event
- Capturing feedback and evaluation data after the event
- Evaluation jargon buster

Evaluation – working out what you want to do before the event

Evaluation is often seen as an activity that takes place after an outreach event or activity. However, for effective school-based activities or public events your thoughts and ideas for outreach should be thoroughly explored long before undertaking the project.

Talking to teachers or other education professionals about the feasibility of the idea at a very early stage is essential to be sure that schools are keen and able to participate. It is a good idea to trial activities or ideas with teachers and community group leaders before undertaking it with groups of participants. Requesting feedback from teachers could be made a condition to participation.

Capturing feedback and evaluation data after the event

Capturing reaction and feedback data during an interactive event can result in positive views from participants who have enjoyed working together, often on something new and exciting. However, measuring impact beyond the event is a useful device to show value to policy-makers and funders.

Capturing data after the event, and then again a short while later, provides a clearer view of whether the event was well targeted, whether the content conformed to the curriculum requirements and what may be improved.

Evaluation jargon buster

Evaluators really like jargon! Here are some key terms used regularly and a summary of what they mean:

Process evaluation

A method of assessing how a programme is being implemented. Process evaluation focuses on the programme's operations, implementation and service delivery.

Outcome evaluation

Focuses on the effectiveness of the programme and its outcomes. Bear in mind that outcomes can be produced in the short term, a longer period or in the long term. You can't do an outcome evaluation too early in the life of a programme.

Economic evaluation

Looks at what resources are being used in a programme and their costs (direct and indirect) compared to outcomes. This is the evaluation that looks at "how much bang for your buck?".

Impact evaluation

Assesses programme effectiveness in achieving its ultimate goals. This is going to be done a number of years after the programme is implemented (how many will depend on the nature of the change concerned).

Developmental evaluation

This is an evaluation approach that can help develop social change initiatives in complex or uncertain environments. It facilitates real-time (or close to real-time) feedback to programme staff thus facilitating a continuous development loop. It is particularly suited to innovation, radical programme re-design, replication, complex issues or crises. It is not the solution for every situation.

Realist evaluation

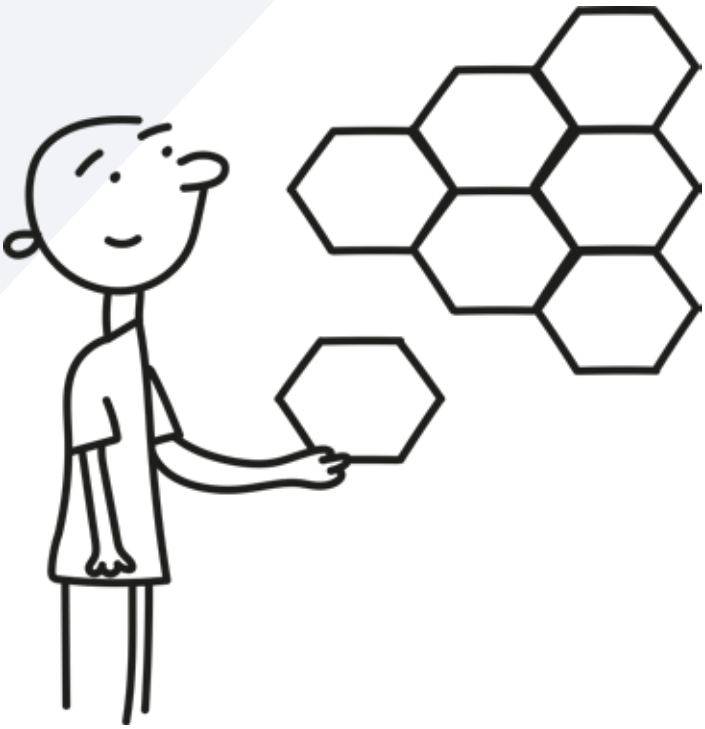
Realist evaluation asks the question: "What works, for whom, in what respects, to what extent, in what context, and how?". In order to answer these questions, realist evaluators aim to identify the underlying generative mechanisms that explain 'how' the outcomes were caused and the influence of context.

Utilisation-focused evaluation

Utilisation-focused evaluation is an approach based on the principle that an evaluation should be useful to its intended users. Evaluations should be planned and conducted in ways that enhance the likely utilisation of both the findings and of the process itself to inform decisions and improve performance.

Top tips for successful evaluation

- Make sure your evaluation explores what it is that you are trying to achieve with your outreach activities, and that it tells you (or others) something useful and/or interesting for planning similar future events. A good starting point is to consider what you want to know and who the evaluation is for (i.e. yourself, funders, managers?)
- Integrate the evaluation into the activity as much as possible, rather than have it as a separate "add-on". That way participants feel that it is a natural thing to be part of, rather than something they have to do after the activity is over and they want to leave.
- If you can make the evaluation easy and practical for participants to contribute, you will get a better response.
- If possible, try to use more than one method for collecting data. Using different techniques will give you different perspectives and better insight into what happened.
- Only collect the sort of data that you are able to analyse, interpret or display usefully. It is a good idea to think about how you will analyse the data before collecting it.
- If you are planning to use online evaluation techniques, make sure the internet connection/wifi available is reliable and fast enough.
- Keep it simple! Don't try to evaluate everything, especially not at first. It is much better to do one thing well – use one method, address a straightforward question – than to try to do too much.



CHAPTER

9. Looking at the bigger picture of evaluation

In this chapter we discuss:

- Programme theories and logic models to support evaluation work
- Developing your own logic models
- Theory of change and its use and value

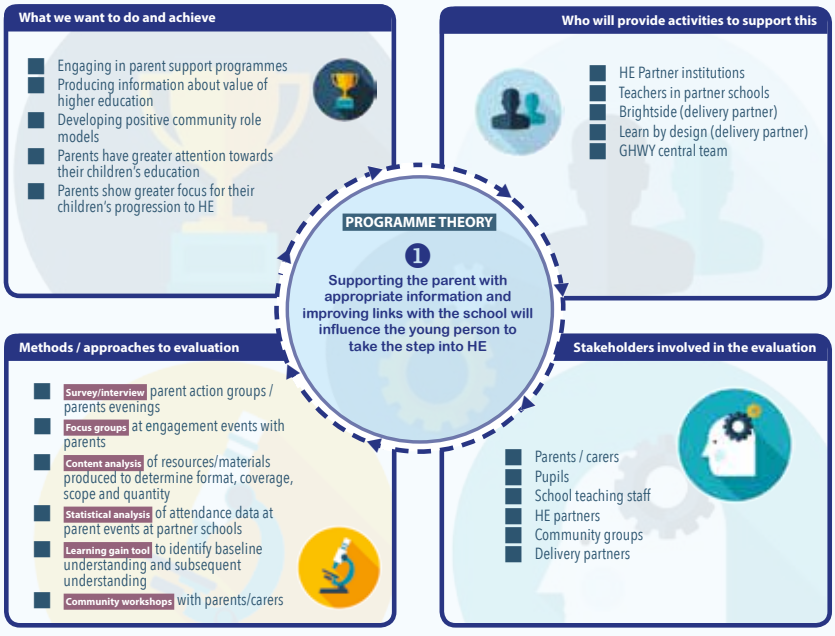
Programme theories and logic models to support evaluation work

What are they?

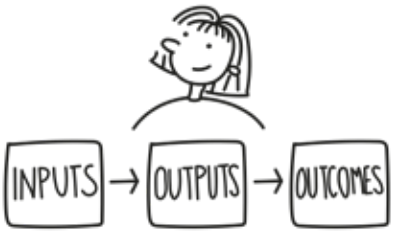
A programme theory explains how an activity (such as an outreach event or programme) is understood to contribute to a chain of results that produce the intended or actual effects or impacts. These impacts can be both positive (which are beneficial) and negative (which are detrimental). They are really useful to use as they can often show the other factors which contribute to producing impacts, such as context and other projects and programmes. An example programme theory sketch is shown below, examining a series of events to increase pupils' interests in progression to higher education.

Theory of change is, at its heart, a straightforward concept (Creating your theory of change). Throughout our work and personal lives we have aims, objectives and ideas about how to achieve our goals, but we rarely take the time to think these through, articulate and scrutinise them. All a theory of change process does is to make these assumptions explicit and therefore more testable.

Example programme theory



To help make programme theories accessible, they are usually converted to an illustrated form, showing where activities relate to effects and impacts. These illustrations are referred to as 'logic models', because they show the overall logic of how the activity or programme is understood to work.



How they are used

A programme theory is a collection of indicators that provide a starting point from which to base our evaluation efforts. They are the hypotheses, or questions, we wish to explore, test and measure in order to provide evidence of effect and impact of our engagements and interventions. In the example below the programme designers have spent time and effort thinking about what they want to achieve and how they will do this. Crucially, they have also factored how they will assess the programme's impact (how they will evaluate it), as well as who will be involved in providing impact or evaluation data (i.e. the stakeholders involved).

Logic Models

A really helpful tool for robustly planning and evaluating your outreach project is a logic model. Logic models are a tool used by many funders, managers and evaluators of complex interventions to help them plan and evaluate their success. Using a logic model enables you to map your project, consider what you are hoping to achieve, and how you plan to achieve this, and to make your assumptions about change explicit.

A typical logic model can have a number of distinctive parts, but they essentially focus on inputs, activities, outputs and outcomes. Typically they might include content similar to that outlined in the simplified example below.

Example programme theory

INPUTS	ACTIVITIES	OUTPUTS	OUTCOMES
(The resources for your programme)	**(What you do with the resources)**	**(The direct products of your activities)**	**(Changes in learning & behaviours)**
Money, time, facilities, equipment, staff, partnerships, infrastructure etc.	Activities that use resources to create and deliver outputs.	Workshops, experience days, subject talks, training days, residentials etc.	Knowledge, skills, abilities, attitudes, awareness.

How to evaluate public engagement projects and programmes

This guidance document explores the use and value of theories of change and logic models when assessing the impact of engagement and outreach work. Drawing on their considerable expertise and experience in the higher education sector, the National Coordinating Centre for Public Engagement provide examples of what works and typical tools and techniques utilised by practitioners.

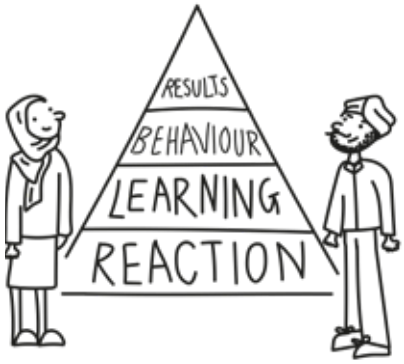
Want to know more?
Download the full report here.

How to evaluate public engagement projects and programmes

A logic model can provide a useful framework to map out your project – and understand better the shape of what you are trying to do. Working through the logic model with those who will be involved in the project (e.g. team members, partner organisations) helps to have a useful discussion about your project, and highlights the assumptions you are making. It helps you make explicit how you think the activities you are planning will lead to the desired impacts.

A model for evaluation – Kirkpatrick. Measuring reaction. Measuring learning. Measuring behaviour. Measuring results

In his work on assessing the impact of training programmes, Kirkpatrick developed a model that has subsequently become widely used in measuring the effects of training projects and programmes. The model has four stages:



Reactions

This level measures how participants of the training react to it. This might include whether students actually attended the sessions; it might also include informal feedback to tutors/programme managers on the content of modules/programmes.

Learning
This level assesses the extent to which learners have advanced in skills, knowledge or attitudes. This might be explored through the advanced abilities of the workforce since undergoing advanced training.

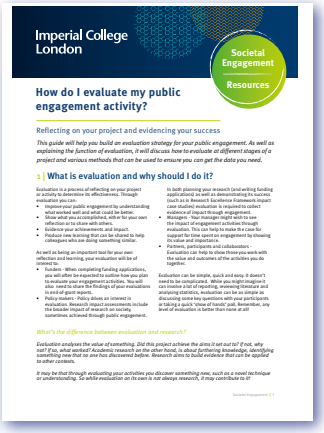
Behaviour
This level measures the transfer that has occurred in learners' behaviour due to the training programme. This might reasonably include attempts to assess how learners on modules and programmes of study have utilised that learning elsewhere (perhaps within the workplace).

Results
This level was designed to assess the impact on production, improved quality and higher return on investments for business organisations funding the training programmes. This level might include results in terms of increased productivity as a result of student involvement with the work-based learning programme.

Developing your own logic models
The W.K. Kellogg Foundation is a charitable organisation dedicated to supporting organisations and communities through the practical application of knowledge and resources to improve the quality of life for them and that of future generations. Their Logic Model Development Guide outlines the processes behind developing a functioning logic model for those engaged in publicly-facing outreach and engagement work. It is targeted at not-for-profit charitable, public-sector organisations and is of value for anyone seeking to robustly explore effect and/or impact of engagement work.

Theory of change and its use and value
The United Nations International Children's Emergency Fund (UNICEF) work across the world on projects and activities that move towards societal, economic and environmental changes for children and youth groups. For policy-makers engaged in this work it is important that they can effectively measure and assess impact and effect. They define a theory of change as an explanation of how activities are understood to produce a series of results that contribute to achieving the final intended impacts. This guide (Theory of Change) produced by UNICEF to support work in this area seeks to share contemporary research practice, methods, designs, and recommendations from renowned researchers.

The National Council for Voluntary Organisations (NCVO) represents over 16,000 voluntary organisations, charities, community groups and social enterprises across England. Through their 'Know How' series of support and guidance materials they have developed a practical guide on How to build a theory of change. This structured resource works through the example of a youth unemployment project to develop a functioning theory of change process.


Imperial College London

Societal Engagement

Resources

How do I evaluate my public engagement activity?

Reflecting on your project and evidencing your success

What does good evaluation look like? Six key principles

1. Rigorous and fair – Select and apply suitable methods and analytic approaches in a rigorous and unbiased manner. Take steps to avoid leading questions and bias in interpretation of data, and give findings a fair and proportionate voice within reporting.
2. Inclusive and accessible – Encourage a diversity of voices and perspectives, and design methods to be accessible, appealing and suitable to the activity.
3. Triangulation – Use various methods to account for weaknesses (e.g. using both qualitative and quantitative data).
4. Internally focused and externally situated – Mostly focus on the activities and work carried out within the College and its partners, making sure to situate this within a wider context of other universities and engagement departments, broader literature and previous studies.
5. Long-term and realistic – Where possible aim to make conclusions and recommendations that have longevity and identify findings that hold true beyond the immediate context. However, we acknowledge that there will be instances where it is not possible to conduct an evaluation over the term required to make conclusions on longer term impacts. In these situations value the use of proxy indicators – those which might suggest a likely long term outcome, based on previous work and research.
6. Creative and fun – Evaluation methods should be integrated into engagement activities where possible. Projects should utilise a diverse range of approaches and evaluation activities should be fun and engaging to take part in.

Want to know more?
Download the full report here.

What does good evaluation look like?

Glossary of key terms used in this handbook

Curriculum-mapped
The process of aligning delivered content to relevant subject areas being studied by participant (student) groups.

DBS (Certificate)
A DBS Certificate (formerly known as CRB Certificate) confirms an applicant's criminal record, and by extension, their suitability for working with children and/or vulnerable adults.

Evaluation
Evaluation is the collection of, analysis and interpretation of information about any aspect of a programme of education or training as part of a recognised process of judging its effectiveness, its efficiency and any other outcomes it may have.

Impact
The effect that an activity or engagement has had on participants or others involved in it.

Outreach
Outreach focuses chiefly on enhancing and improving education in schools, homes and communities. It is often provided by educational institutions or other sponsors in order to promote particular messages. Typical sponsor benefits include reinforcing brand identity, nurturing community goodwill, and fulfilling other corporation/organisational missions.

Risk assessment
Risk assessment is a term used to describe the overall process or method where you: Identify hazards and risk factors (associated with your planned outreach event or activity) that have the potential to cause harm.

Safeguarding
Safeguarding is the action that is taken to promote the welfare of children and protect them from harm.

SEND
Special Educational Needs and Disability.

STEM
Science, Technology, Engineering and Maths.

Theory of change
Theory of Change explains the process of change in outreach work by outlining causal linkages in an initiative, i.e., its shorter-term, intermediate, and longer-term outcomes.

Widening participation
The process of opening up access to career routes or educational opportunities for those typically excluded.

How can I do this better:

a practical guide to help volunteers and organisations engage with young people, teachers, and the general public

This handbook is designed as a dip-in resource and contains easy to undertstand introductions to topics, suggestions and useful tips for those engaged in outreach, public engagement, schools liaison and activities that might form part of corporate social responsibility commitments.