



THE STEM AMBASSADOR PROGRAMME

A GUIDE TO WORKING WITH STEM AMBASSADORS
FOR YOUTH AND COMMUNITY GROUPS





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STEM LEARNING AND THE STEM AMBASSADOR PROGRAMME

STEM Learning is the largest provider of education and careers support in science, technology, engineering and mathematics (STEM).



We offer

support and guidance to enhance the teaching and learning of STEM subjects:

- high-impact **CPD courses** for educators
- quality-assured **learning resources**
- **the STEM Ambassador programme – 30,000+ volunteers from around 7,000 employers sharing knowledge and experiences free of charge to help young people of all ages achieve more and progress further in STEM**
- professional awards and recognition schemes designed to celebrate excellent practice

Look out for the **black or white bold** hyperlinks in this handbook



Our vision:

A world-leading STEM education for all young people across the UK



Supported by:

A unique partnership of Government, charitable trusts and employers



Working with:

Schools, colleges and youth and community groups

“What we’ve learnt from working with STEM Ambassadors is the importance of role models. It’s really powerful for young people to see somebody in front of them; to see a pathway, whether that’s to a career or a particular lifestyle, or choice that they can aspire to. We’ve been able to show real diversity of age and gender to those young people and I don’t think we could have done that without the STEM Ambassador programme.”

Christina Watson,
Head of Programmes,
UK Youth

The STEM Ambassador programme is completely free of charge

MEET THE STEM AMBASSADORS

STEM Ambassadors are positive role models who give their time and enthusiasm for free to bring STEM subjects to life and demonstrate their value.



The STEM Ambassador engagement was ideal for the session we were running, with holistic outcomes regarding getting young people to think about how they present themselves to others."

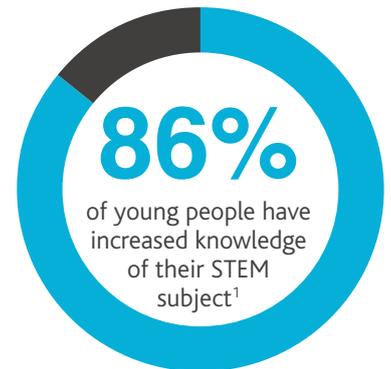
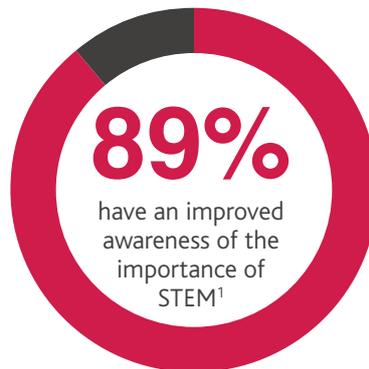
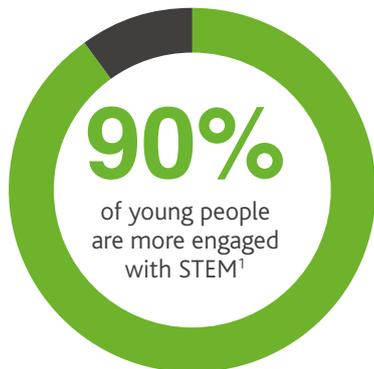
Dimana Popovska, Programme Executive at the Prince's Trust



STEM AMBASSADORS BRING MANY BENEFITS

Engaging young people of all ages

After working with STEM Ambassadors:



Helping young people to see a future for themselves in STEM

Research shows that inspiring STEM role models can boost young people's Science Capital² and help them see a future for themselves in STEM.



I write and create educational science activities, so have been able to show young people that choosing a STEM subject at university doesn't mean you will end up working in a lab in a white coat. You really can apply your STEM knowledge in so many different fields."

Katrina Dixon, STEM Ambassador

¹STEM Ambassador Impact Report, 2016

²Science Capital is based around theories of social capital. The more of it you have, the more likely you are to believe that 'science is for me', which can lead to engaging better as well as taking science education further.

stem.org.uk/sites/default/files/pages/downloads/Science-Capital-Made-Clear.pdf



Enhancing extra-curricular learning

By bringing learning from business and industry to young people outside the classroom, STEM Ambassadors can enrich learning with current and cutting-edge STEM contexts.



Deciding on your future at a young age can be really scary, so having a bit of extra support and guidance can really make a difference."

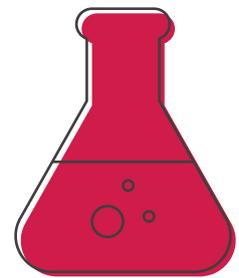
Emma Goulding, STEM Ambassador

³This data comes from analysis of data on the STEM Ambassador website that is reported by the activity holders themselves

STEM AMBASSADORS CAN OFFER SUPPORT IN MANY WAYS

There's no limit to the ways in which STEM Ambassadors can inspire the next generation! They:

- show how STEM subjects apply in the **real world**
- illustrate what a **career** in STEM really looks like and share their own stories
- challenge young people to solve **real-life problems**
- bring **specialist equipment** for young people to experience
- make STEM relatable by bringing **experience of the everyday** to activities



You can request a STEM Ambassador to deliver a new activity or support an existing one. They visit youth and community groups, attend events at other venues or host visits at their place of work; delivering a wide range of activities, completely **free of charge**:

STEM activities 	Support with or deliver workshops, or events (e.g. fairs, camps, clubs)	Judge STEM competitions	Bring specialist equipment for young people to experience	Host a trip
Careers support 	Give careers talks or help at careers fairs	Host a workplace visit or work experience	Speed networking with young people and parents	Help young people with mentoring, mock job interviews and CV writing
Wider support 	Develop and run CPD for group leaders	Provide support and advice for for staff – from activities to strategy	Develop resources and activities	Develop connections with local businesses

The opportunities are endless – thinking outside the box is what really inspires our young people!
If you have an idea, speak to your local Hub.

GET INSPIRED!

We asked some STEM Ambassadors about their favourite volunteering experience



"Taking **live insects and entomology activities** to a rural cubs / scouts group."

"Giving **an all-ages interactive talk supported by live art on evolution, adaptations, and why animals look and behave the way they do to survive.**"

"**Extracting DNA from strawberries.** It was messy and engaging."

"Providing **careers advice at the Big Bang Fair**, getting the young people to guess my career based on whiteboard sketches."

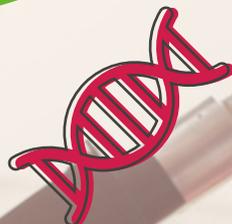
"Setting up a **paper aeroplane challenge** for a squadron of Air Cadets. Cheap, simple and competitive."

"Running a **microscopy session.**"

"We delivered **a four-day long residential event with the Smallpeice Trust** a few years ago which went really well and we had some great feedback from the young people."



Watch **STEM Ambassadors in action** on the **STEM Learning website**



FINDING A STEM AMBASSADOR IS EASY

There are three ways to find and request a STEM Ambassador:

1. On the STEM Ambassador website

Register and post your requirements to directly communicate with STEM Ambassadors. The process is quick and easy, but there are some tips for posting your requirements on **page 10–11** and **more information online** if you need it.

Browse through the **offer pages** of local STEM Ambassadors, and express an interest in any offers that might be a good match to discuss your needs.

2. Via your local STEM Ambassador Hub

Our network of 17 STEM Ambassador Hubs coordinate the volunteering opportunities of over 30,000 STEM Ambassador volunteers across the UK. If you are not sure exactly what you are looking for, contact your Hub for support, opportunities and local expertise. They develop links between groups and individuals working to enhance young people's STEM education.

Find out how to **get in touch with your local Hub and sign up for email updates** online.

3. Through your existing contacts

Consider connecting with local employers that you know. Encourage parents and guardians to sign up and volunteer at your local group.

If you haven't heard from the STEM Ambassador within two weeks, or enough time to manage your diary, contact your local Hub to let them know

Any queries, please contact your local STEM Ambassador Hub

WRITING A GOOD ACTIVITY LISTING



Once you have registered you will be able to advertise an activity. It's best to put your request in as early as possible for the best chance of support. Follow our top tips to make your activity sound interesting and worthwhile for volunteers.

Interactive Rocks and Fossils session with scouts in Whitby, Yorkshire

Number of Participants: 30	Age Range: 7-11 years	Ambassadors: 1
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Participating Organisations:

Scouts

Activity Type:

Hands-on practical

Aim:

For participants to handle some rocks and fossils and learn about rocks and fossils and the local landscape

Description:

We are looking for a STEM Ambassador who can talk to scouts about rock formation, how fossils are developed, and link this to our local area.

The group is working on a Local Knowledge Activity Badge, which requires them to "Study an aspect of national history, local history or family heritage. Exhibit or present the results to other people." Some of the scouts have chosen to focus on local geology.

It would be great if a STEM Ambassador was able to bring in examples of rocks and fossils. We would like the session to last around an hour to an hour and a half, and ideally it would take place on Wednesday or Thursday evenings, but that is flexible.

After the session, we would like the scouts to be able to describe how a fossil is formed.

This is the first thing STEM Ambassadors will see when they are browsing volunteering opportunities.

Keep the title simple and descriptive. Include your location in the title, so volunteers can see at first glance whether they can get to you.

Can add multiple organisations if applicable.

It is helpful to include details about the learning context.

Make it clear where you can be flexible.

Providing support to drone club

Number of Participants: 250 **Age Range:** 11-14 and 14-16 years **Ambassadors:** 2

Participating Organisations:

Dulstone Drone Club

Activity Type:

Hands-on practical

Aim:

To inspire interest and expand technical knowledge about drones, while also having fun

Description:

We are looking for STEM Ambassadors to talk to young drone enthusiasts about the technical side of drone-building, and to give them a practical taste of what this involves – whether through coding or actual building. This has been requested by the older members of the group.

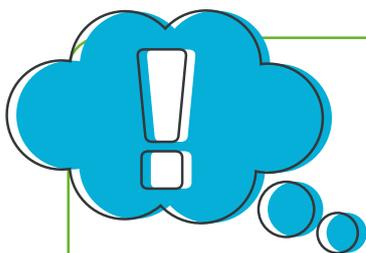
We have three drones and meet every Thursday evening at Dulstone School recreation ground at 6pm for one hour (although we do have an indoor space and IT equipment available to us in the school building, if required).

After the session, we would like participants to take away fresh enthusiasm and some new skills related to coding and / or building drones.

Be as specific as possible about timings etc.

Make it clear what facilities will be available.

Tell us about the impact you would like the activity to have.



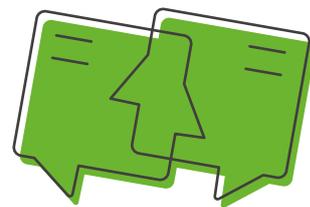
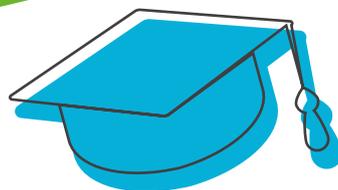
Remember! Click **offer position** each time a STEM Ambassador expresses an interest. If you don't do this, they won't know that you want them to come! Most of our STEM Ambassadors work full time. The quicker you offer them a position, the more likely they are to be able to make arrangements to support your activity.

PREPARATION MAKES PERFECT

Communicate and collaborate with your STEM Ambassador

Once you have found a STEM Ambassador it is important to discuss expectations clearly, so everyone can get the most out of the activity.

Have a conversation early in the STEM Ambassador's planning process, then make contact again when their plans are further advanced. It may help to work through the checklist on the next page. You can download a copy **online**.



Prepare your group

You could:

- ask the group to think about questions in advance
- recap their knowledge on the subject that the session will focus on
- send your group's questions to the Ambassador in advance so that they can come in with the answers prepared
- talk to your group about behavioural expectations during the activity.

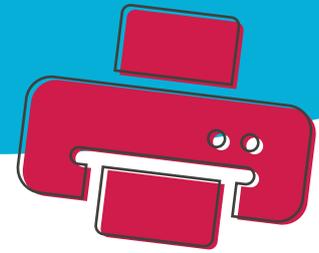
Communicate with parents and carers

Tell your parent body about the STEM Ambassador programme – you can ask your STEM Ambassador if they can provide some information.

You could encourage parents with a STEM background or connection to sign up.



CHECKLIST



Go through the following with your STEM Ambassador:

Communications

Contact names and details? Preferred times and methods of contact?

Audience

Numbers? Ages? Special needs? Behaviour routines (e.g. the best way to get the group's attention, reward schemes for positive behaviour)? Will you need to divide them into small groups?

Note: You will need to actively support with behaviour management and differentiation during the session. If you have any great tips for getting the audience's attention please share them on the day – or model them for the STEM Ambassador. **It's important to remember that they are not teachers!**

Activity Content

What are your requirements, e.g. format or topic? What will the audience already know? Already done any related activities?

Timings

Dates and times that work for everyone? Activity duration? Timing of any breaks? One-off, or follow-up activities required?

Support

Number of adults needed? Who? Roles and responsibilities?

Location

Size? Facilities? Back-up option (e.g. in case of wet weather for an outdoor activity)?

AV

AV facilities required? Plug sockets? Need to bring anything (e.g. own laptop)? Need to send PowerPoint / film in advance to test?

Resources and equipment

What is required? Who will supply it?

Safety

If there will be a practical activity, are you comfortable with the STEM Ambassador's plans? Do any young people or supporting adults have relevant allergies? Will you do a risk assessment? Does the subject matter cover any potentially sensitive areas?

Note: Health and safety remains the ultimate responsibility of the activity organiser and school or college.

Arrival and set-up

Parking? Arrival time? Who should the STEM Ambassador ask for when they arrive? Will they need to bring ID / their DBS (or PVG) certificate? Access to the venue before the session starts to set up?

After the session

How much time and space will be available for pack-up? How can you / the young people provide feedback?

FEEDBACK IS CRUCIAL TO THE PROGRAMME'S SUCCESS

Feedback is vital to the STEM Ambassador programme. It helps:

- **you and your STEM Ambassador**, to see the areas you can improve on if working together in future
- **STEM Learning**, to measure the impact of the STEM Ambassador programme on young people
- **young people**, as feedback is vital in securing ongoing funding to keep the programme going

Ways to feedback

Young people

The STEM Ambassador may use the **STEM Ambassador Impact Tool** to gather feedback from young people at the end of the session quickly and easily. They mark their agreement to four statements using a 4-point scale.

You and the STEM Ambassador

Feedback online via the STEM Ambassadors website.

Make time for a **debrief**, preferably face to face immediately afterwards or as soon as possible over the phone.

Discuss future activities, what could you do together in the future, could you utilise the wider network of STEM Ambassadors? Your company, institute, connections?

Share your stories and photos on **social media** – but don't post a photo without everyone's consent (see your organisation's photography guidelines).

@STEMAmbassadors **#STEMAmbassadors**

If you have not had the experience you expect, you can also contact your Hub directly.

The STEM Inspiration Awards

STEM Learning's STEM Inspiration Awards recognise and celebrate the work that individuals, youth and community groups, and employers do to inspire young people in STEM.

Free to enter, this annual award scheme offers individuals and organisations from every area of STEM, including STEM Ambassadors and inspirational STEM Clubs, the chance to shine.



CASE STUDY

CoderDojo clubs in libraries



Claire Quigley, a STEM Ambassador of five years, has been running a CoderDojo club at the Mitchell Library in Glasgow for children aged 8–11 for the past year. She recently started another club for children aged 12–17 in order to provide an activity for older young people, focusing on the creative applications of coding.

The younger coders mainly work with Scratch to create games and animations. The older coders are interested in game development and web technologies, including Virtual Reality.

Claire also uses a network of regular volunteer STEM Ambassadors to help support running the clubs. They come from a variety of backgrounds – some are employed by large companies such as Morgan Stanley, some are students, and a number have come through the social enterprise Code Clan.

The support provided by STEM Ambassadors to the young people attending Dojos is invaluable. Claire has seen the impact of clubs like CoderDojo first-hand:



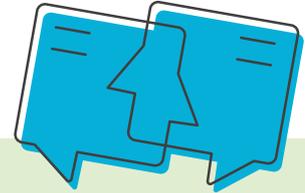
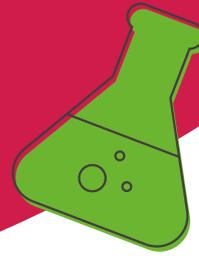
One of the 8–11-year-old club members recently went to the Coolest Projects event in Manchester to enter the competition with a maze game he'd coded himself. This gave him the opportunity to improve his communication and presentation skills, as he needed to tell the judges and other competitors and visitors about how he had developed the game."

Clare Quigley, STEM Ambassador



CASE STUDY

Girl Guides 'Challenge Day', Arden 2018



Arden 2018 Girl Guides International Camp was a residential camp for 600 girls, organised by Guiding Warwickshire and open to guides from other areas of the UK and the world.

Girlguiding Warwickshire invited their local STEM Ambassador Hub to contribute to the 'Challenge Day' activity programme. STEM Ambassadors from across the West Midlands took part, some delivering bespoke workshops offered by their

companies, others by supporting activities in the 'STEM Area', a marquee which was dedicated to STEM-related workshops and challenges.

The STEM Ambassador Hub also introduced the camp organisers to a range of partner organisations who ran additional practical workshops and activities, including Worcester Medical Museum, The Earth Heritage Trust and the Cheltenham Science Group.



I have heard nothing but positive feedback and praise from the Guides and their Leaders, with many young people commenting, 'I did not know I could do that.'

A sure sign of a successful day of events such as this is how many participants stay at the activities and do not return to their own camp. Having walked round the site on Monday morning and again in the afternoon, there were very few Guides in the camping areas, and those that were there had come for a drink and were eager to get back to the challenges."

Camp Organiser, Arden 2018 Girl Guides International Camp

During the day the girls were rotated around the different themed areas of the camp by their Guide leaders and the STEM marquee was buzzing with excited groups throughout the day:

“ I learned new things by doing a lot of interesting activities that I had never done before.”

Girl Guide

“ I learned lots doing this activity. I now know that mice have very small skulls and big gaps between their teeth.”

Girl Guide

“ I have never done any proper science like this before. It was such fun.”

Girl Guide

“ This activity was like magic – but now I know it was due to weight difference.”

Girl Guide

“ Allowing the girls to 'play' and discover for themselves. It was great to watch and see the girls become so engaged and fascinated by science.”

Guide Leader, Arden 2018 Girl Guides International Camp



CASE STUDY

Royston Youth Action holiday programme



Royston Youth Action (RYA) ventured into the theme of 'Under the Sea' during its recent children's summer holiday programme. More than 50 children between 5 and 12 years old explored Science, Technology, Engineering and Maths through games, activities and workshops designed to inspire problem-solving, creativity and physical activity. STEM Ambassadors supported RYA with weekly sessions over the full three weeks; harnessing the interests, ideas and diverse needs of the children while also preserving the programme's marine theme.

Royston Youth Action first found out about the STEM Ambassador programme through social media sharing some of the wonderful work being carried out across the city. Intrigued to find out more, they met with the STEM Ambassador

Coordinator in the West of Scotland Ambassador Hub to talk about how they could support their work. With their help, they advertised the holiday programme to local Ambassadors – and it wasn't long before enthusiastic volunteers were getting in touch.

Prior to the sessions, the Ambassadors discussed the theme of the programme and potential aims. They created a session plan that could accommodate the theme of 'Under the Sea', as well as adapting to meet the needs of all the children that attended, who come from a number of diverse backgrounds, including age, culture, religion, education, as well as children with physical and mental health conditions.



We could not recommend the STEM Ambassador programme enough for any organisation looking to explore science-related activities within their programme. With so many Ambassadors coming from diverse working backgrounds and areas of expertise, there will always be a skilled professional that can meet the needs of your community."

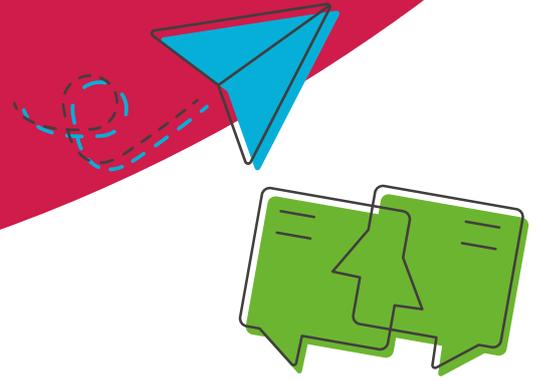


These Ambassadors have introduced children to a world of science beyond the school gates and made it fun along the way. This provides children with ambition and a sense of curiosity to explore science further, and we have used this experience to explore STEM further, and more specifically, build our programme around STEM-related projects."

Children's Worker, Royston Youth Action in Glasgow

CASE STUDY

Summer of Space 2019 Family Festival at the Science Museum



During the Science Museum's Summer of Space 2019 Family Festival, a STEM Ambassador came in to run a sensory activity about 'The Smells of Space'. Visitors were taken on a journey of discovery by using their imagination and smelling a range of odours related to the composition of the planets and moons of the Solar System.



STEM Ambassadors have been a fantastic addition to our regular free Family Festivals as they are enthusiastic individuals with great ideas who enjoy interacting with the public."

Volunteer Coordinator, Science Museum

The STEM Ambassador was recruited through a simple survey on Survey Monkey, where volunteers were asked for a short description of their activity idea. The role was advertised on the STEM Ambassadors website via STEM Learning.

The Smells of Space session was already very well planned out by the STEM Ambassador that was chosen, so the team at the Science Museum didn't have much involvement in the planning stage. They did, however, help with some of the logistics and provided a day's training course about how to engage with the Museum visitors.



The STEM Ambassadors we have worked with have really appreciated the training course as it provides them with skills they can use in their everyday job regarding engagement and presentation skills."

Volunteer Coordinator, Science Museum

