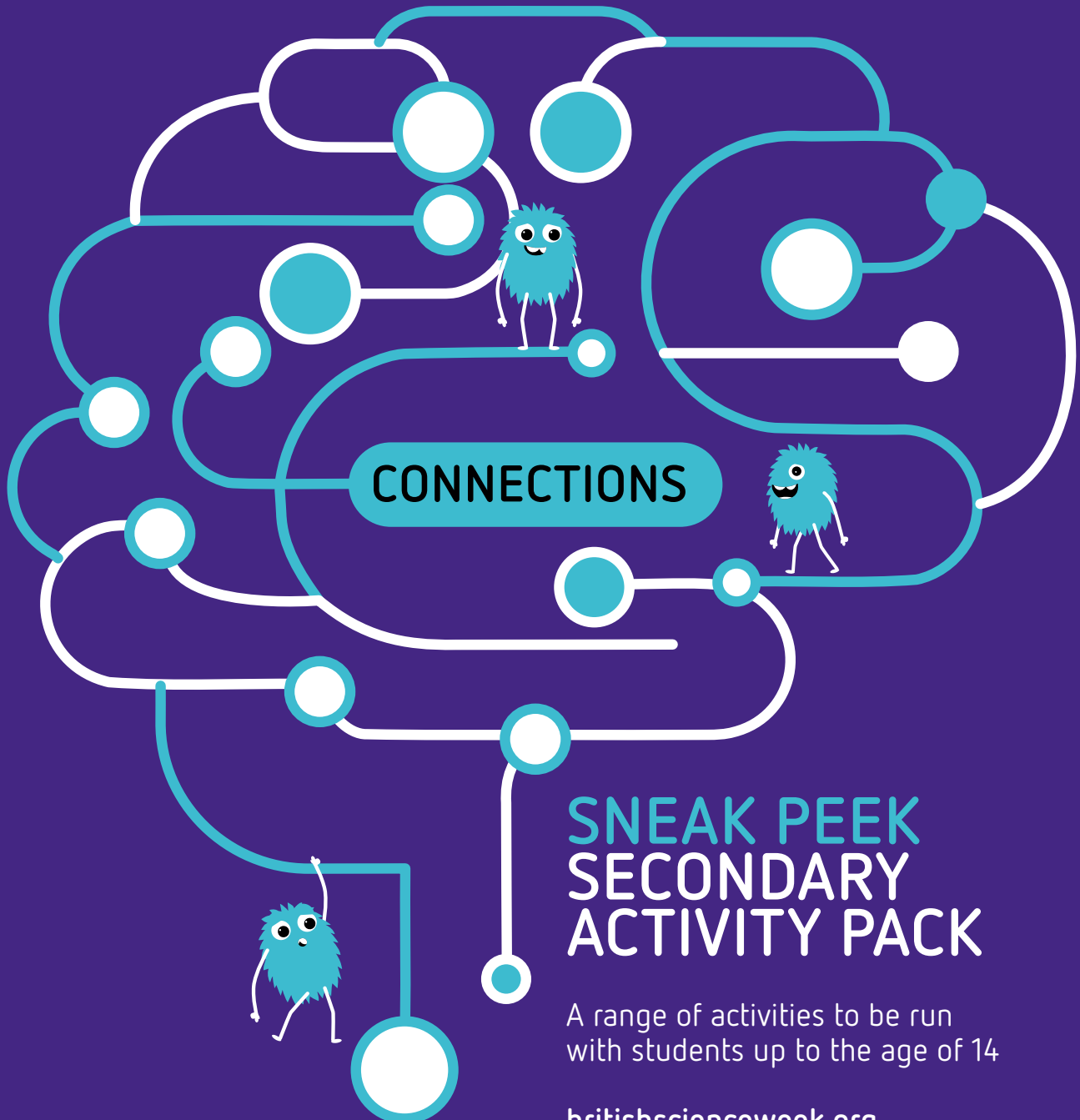




# BRITISH SCIENCE WEEK

10-19 March 2023



## SNEAK PEEK SECONDARY ACTIVITY PACK

A range of activities to be run  
with students up to the age of 14

[britishscienceweek.org](http://britishscienceweek.org)

Delivered by



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# BRITISH SCIENCE WEEK 10-19 March 2023

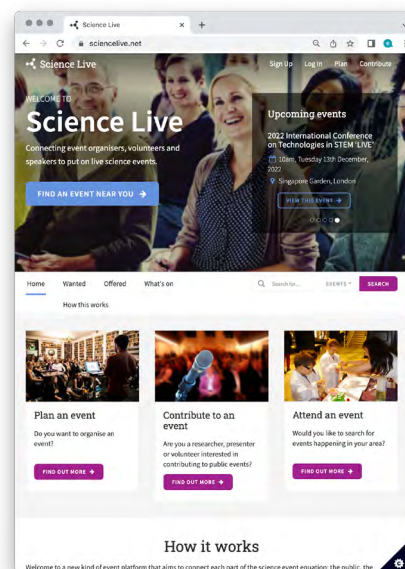
This teaser pack includes an exciting mix of activities and ideas to help teachers, parents or guardians prepare for British Science Week.

It is designed to give you a taste of our full activity pack, which will be released in **January 2023**. Feel free to adapt or extend any of the activities to suit your students' needs or the curriculum you are delivering.

When developing this pack, we looked for activities which promote cross-curricular learning and break down the stereotypes surrounding science, technology, engineering and maths (STEM). We therefore encourage you to use British Science Week as an opportunity to link STEM to other curriculum subjects and to your students' own backgrounds, lives and interests.

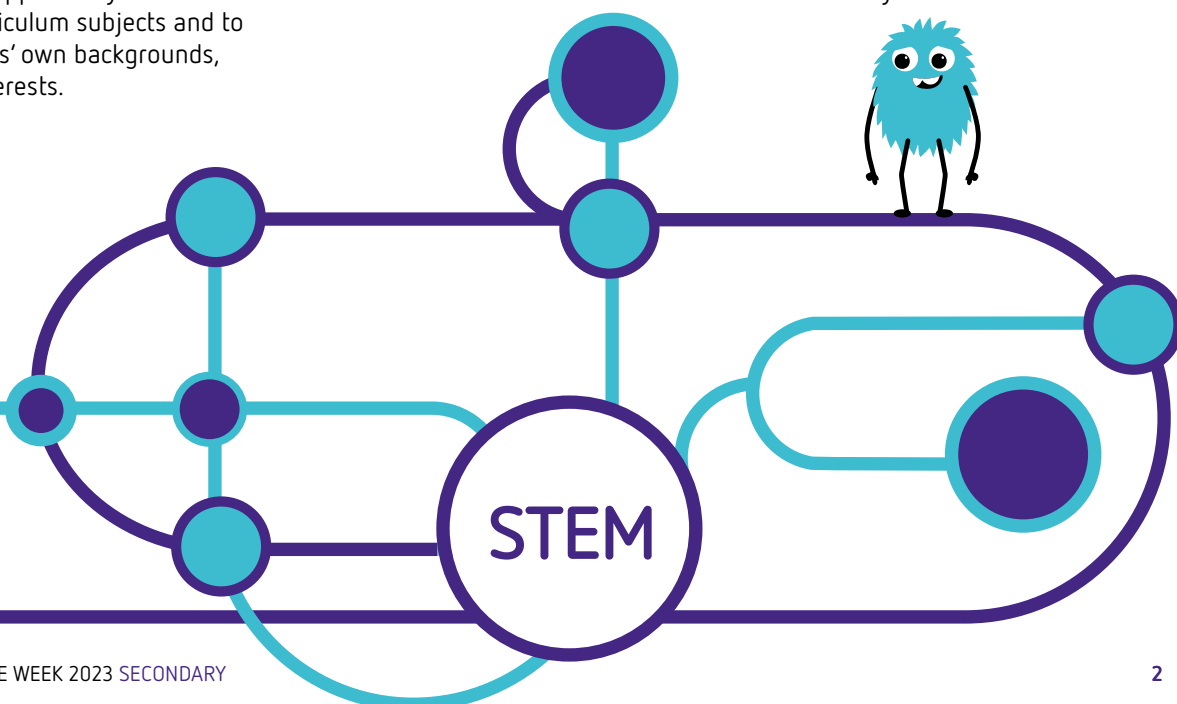
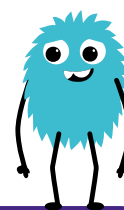
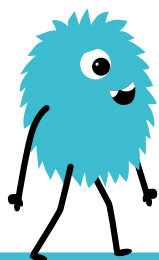
We have included activities for students to complete in any setting, whether that's their school, a club, an organisation or at home with their families.

Share your brilliant activities, vlogs or images on social media! Join the conversation or see what's happening during the Week by tagging British Science Week on Twitter ([@ScienceWeekUK](https://twitter.com/ScienceWeekUK)) and using the hashtag [#BSW23](https://twitter.com/ScienceWeekUK).



## Find an activity near you

You can either create your own activity, or see what activities are happening near you. Last year we reached more than 100,000 people. Help us make British Science Week 2023 even bigger and better! Visit [sciencelive.net](https://www.sciencelive.net) to find science activities in your local area.

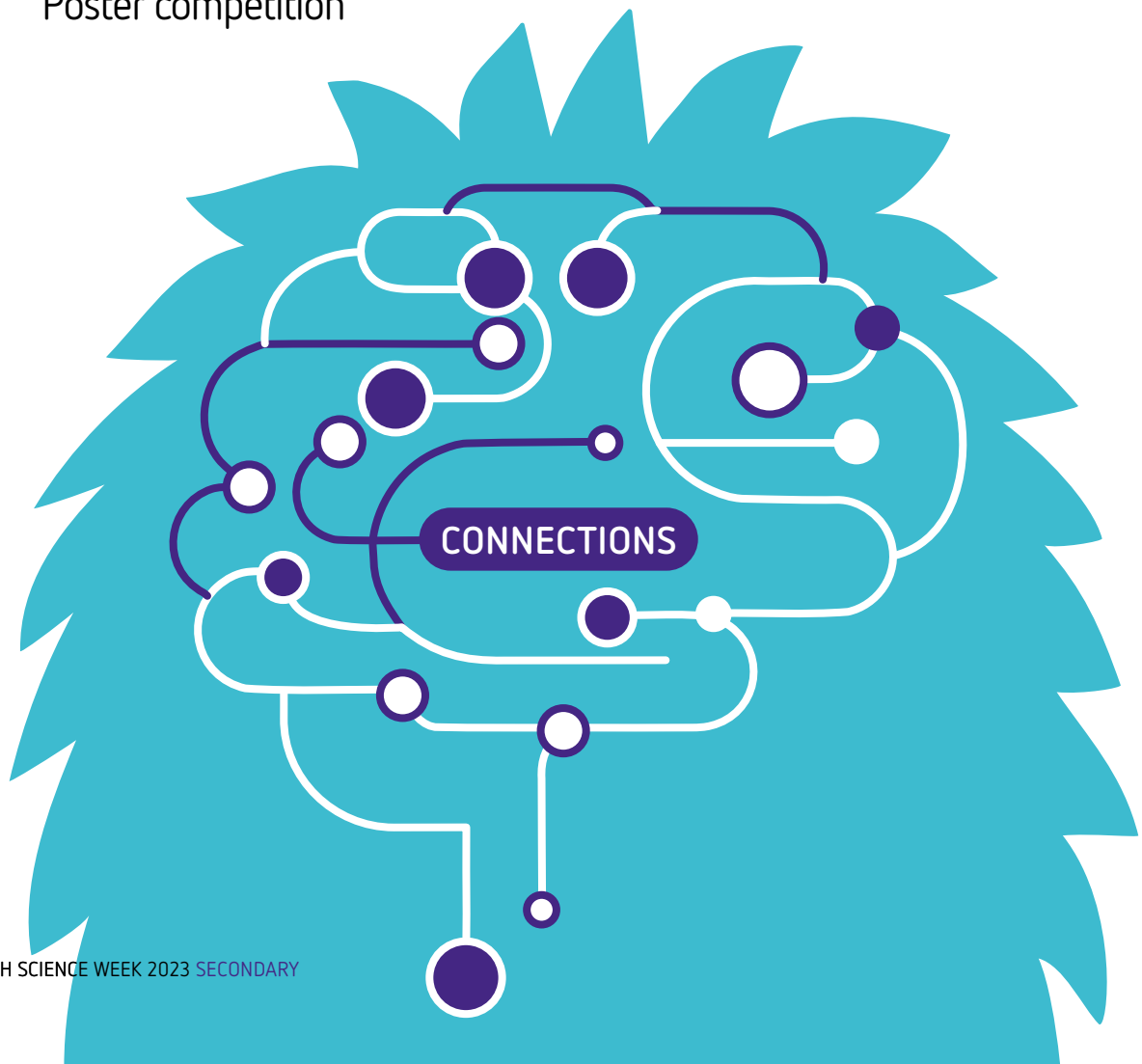




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# INTRODUCING THE THEME

## CONNECTIONS

The theme this year for British Science Week is 'Connections'! Introduce the theme to students in a fun, imaginative way to get them excited about the week ahead. Check out some ideas below:

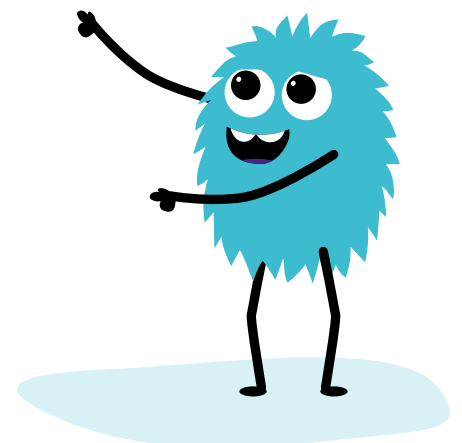
- Ask students to design a poster based on this year's theme and enter it into our poster competition for the chance to win some fabulous prizes. Some of the activities in this pack can provide inspiration, simply look out for the activities marked with the paintbrush symbol shown below! The theme for this year's poster competition is 'Connections', and you can find more information on how to enter on [page 12](#) and at [britishscienceweek.org/plan-your-activities/poster-competition](https://britishscienceweek.org/plan-your-activities/poster-competition).



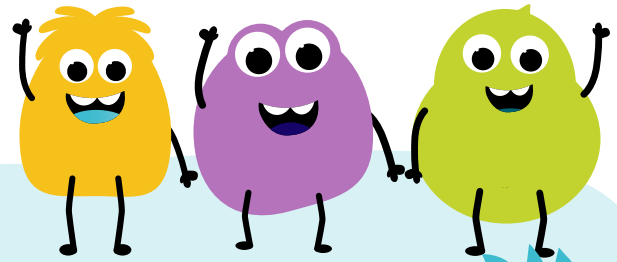
- Try a game, give an audio-visual presentation, explore a mystery or special object, or create a pop-up display which communicates the theme of 'Connections'. These are great to use as fun warm-up activities and are a fantastic way to start British Science Week.
- Engage students by discussing how connections happen between people, animals, in construction and engineering, countries and other things in their everyday lives. What are good examples of connections?
- Invite a special guest or someone from the school community to share with students their own experience of connections (for example, how they made connections when started their career, or how connections are an important part of their field), showing how great things can start from small beginnings. [See page 5](#) for information on how to get volunteers.

Here are some other ideas to include at the beginning of British Science Week:

- Tell students about the plan for the Week and give them a challenge related to the theme. If you are sending home a family experiment, maybe you could introduce or demonstrate it at your setting first.
- Connections are all around us. Where has the topic of connections been in the news or your local area? In which case can connections be good or bad? Is there any way you can encourage conversations about this with students?



## MAKING THE MOST OF VOLUNTEERS



Face-to-face engagement is a great way to get students involved and excited about a volunteer speaker and their topic, but don't forget that there are still opportunities to get volunteers and presenters to engage with students online.



**S**TEM Ambassadors are volunteers who offer their time and enthusiasm to help bring science and technology subjects to life, and to demonstrate their value to young people. It is now possible to request both in-person and remote STEM Ambassador support, meaning that Ambassadors from across the UK can inspire young people wherever they are.

Find out more and make a request for STEM Ambassador support here: [stem.org.uk/stem-ambassadors/find-a-stem-ambassador](https://stem.org.uk/stem-ambassadors/find-a-stem-ambassador) ✨

You can also look for presenters and volunteers via Science Live ([sciencelive.net](https://sciencelive.net) ✨) or ask parents if they work in STEM-related jobs to describe what they do in more detail.

You could also try some of the following things:

- Schedule two or three different guests for careers talks during the Week, if possible, to get students anticipating who the next guest will be and what they do. These sorts of experiences can inspire students to think about what they want to be in the future. Remember, they are never too young to explore their career options!
- Where available, choose volunteers/Ambassadors who challenge stereotypes about scientists the students might have absorbed and promote positive attitude towards science, like female engineers. Let the volunteers/Ambassadors share how their job is making a difference in the world, or an

anecdote of a science activity they loved to do as a child.

- Book your visitors early (as many speakers get booked up during British Science Week). Have a clear idea of what you want them to do and communicate this with them ahead of time.

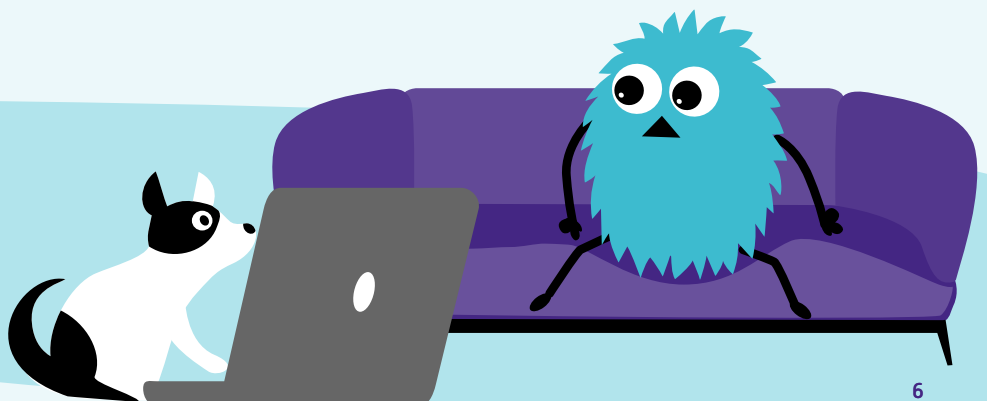
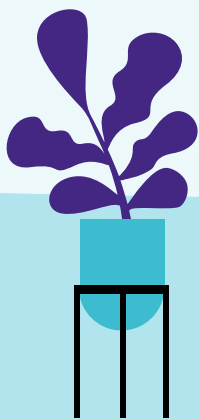
Volunteers come from a range of careers and experiences, from engineers, designers and architects, to scientists and technicians, so get students looking forward to inspirational career talks which broaden their choices and develop their job interests!

Visit the Inspiring the Future website ([inspiringthefuture.org](https://inspiringthefuture.org) ✨) for some helpful ideas for using volunteers, some of which may be transferable when using remote engagement.

# BRITISH SCIENCE WEEK AT HOME

Do you want to help students carry on participating in British Science Week at home, but are not sure how? Here are our top tips for engaging parents and carers with the Week.

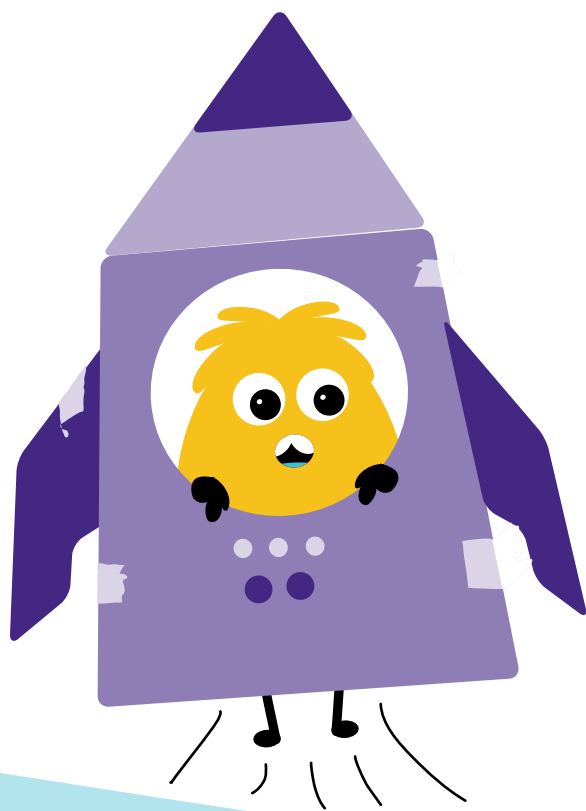
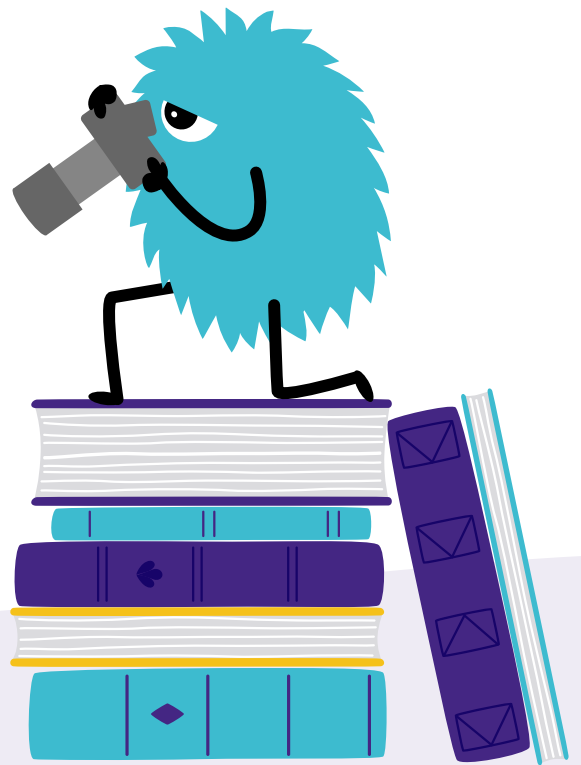
- **Make the most of parent newsletters**, the Parent-Teacher Association (PTA), chat group and text messaging services if you have them. Let all the parents know at least a month in advance of the Week what you have planned, and how you'd like them to be involved. They might be able to collect or donate materials for use during the Week, and if you want them to get involved in any experiments at home they may need time to plan and collect materials themselves. The PTA may be able to support you financially to run activities during the Week or help to drum up parent volunteers.
- **Get parents thinking** about how their own jobs might link to STEM subjects and encourage them to chat with their children about this. You could do this via a newsletter or send students home with activities they can do with their parents, which may then lead onto further conversations. [See page 10](#) ✨ for a great take-home activity.
- **Encourage exploring outdoors**, in the community or in local cultural spots. This could be anything from going on a nature walk around local parks, to spotting STEM in action on the streets around students' homes. You might want to check out the free resources available through CREST Awards: [library.crestawards.org](http://library.crestawards.org) ✨.
- **Send an experiment idea home** during the Week to perhaps spark mealtime discussions around science. Try to make it as low-resource as possible. It can help if it's something the students have tried or seen at school first so that they feel like the 'experts' when they do it at home with family, allowing them to lead the learning. Some of the activities in this pack have been adapted to be easily run at home, so they are a great place to start! There are also a range of science-based home activities requiring few resources in the CREST at home collection: [bsa.sc/collectionslibrary-crestawards-low-resource](http://bsa.sc/collectionslibrary-crestawards-low-resource) ✨.





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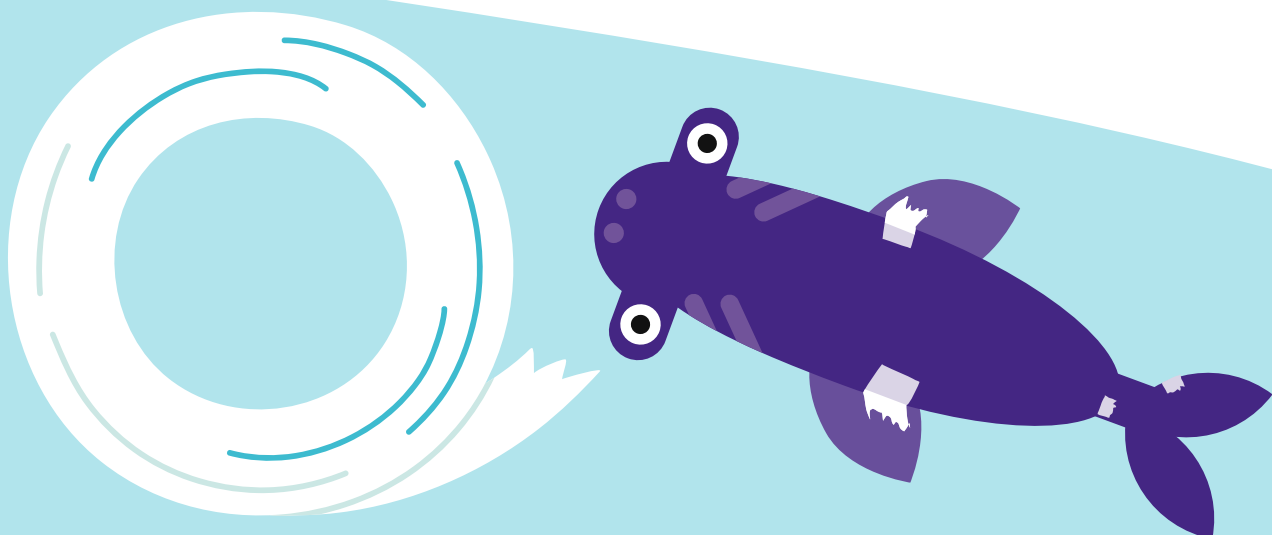
## GATHERING RESOURCES FOR THE CLASSROOM OR HOME



If you can, try to collect materials throughout the year for use during British Science Week. Alternatively, check to see whether there is a scrap shop/store/club open in your local area. These shops are often membership based and can provide a brilliant, inexpensive or free resource for card, plastic, bits of material – all sorts. These things can be turned into spaceships, trees, sea creatures and more; you name it, the kids will think of it! Look at [childrensscrapstore.co.uk](https://www.childrensscrapstore.co.uk) to find a UK directory of scrap stores.

**Encourage students** to take and share photographs when out and about to foster discussion and raise their level of understanding about the connections in building structures, between animals and so on. The more colourful, the better!

**Collect fiction books** and reference books around the theme of 'Connections' to create a themed library.







# The exploration and curiosity don't have to end once British Science Week is over!

Some of the following ideas could help you to expand the learning beyond the Week.

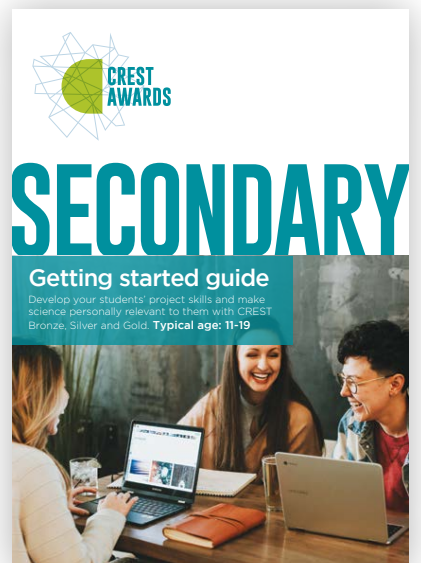
Have students take part in a CREST Award. CREST is a scheme that encourages young people to think and act like scientists and engineers. To achieve a CREST Award, students complete hands-on projects to suit their abilities, interests and age groups. Take a look at the secondary-level Bronze, Silver and Gold projects here: [secondarylibrary.crestawards.org](http://secondarylibrary.crestawards.org) 🚀

Consider sharing what you learned during British Science Week by running a Continuing Professional Development (CPD) session for other teachers in your school or, where relevant, academy chain. Think about incorporating the Science Capital teaching approach into your methods:

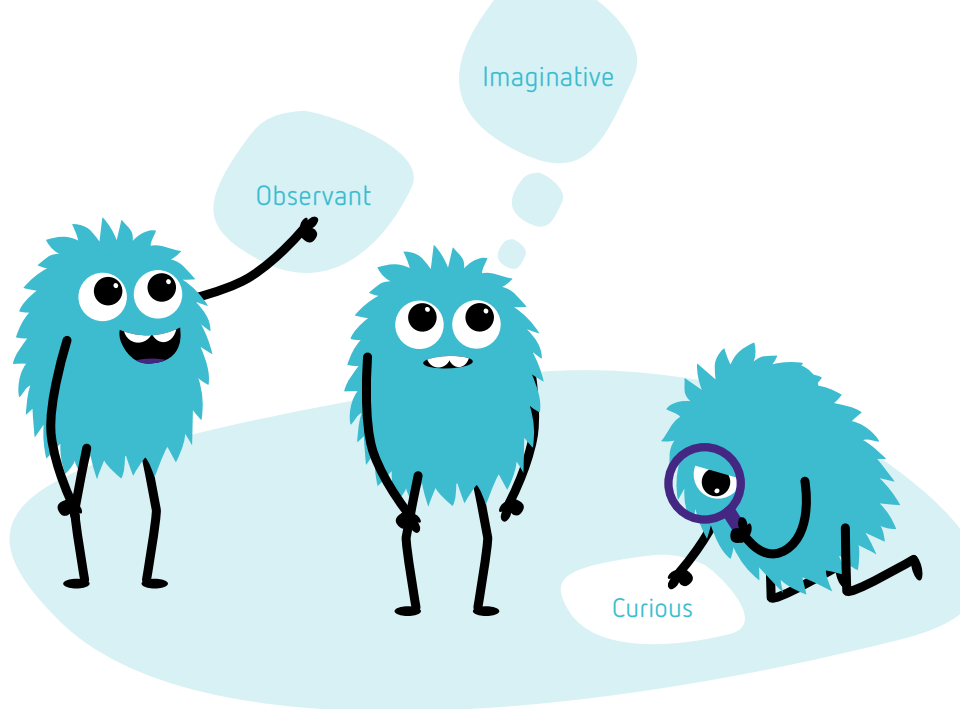
[ucl.ac.uk/ioe/departments-and-centres/departments/education-practice-and-society/science-capital-research/science-capital-teaching-approach](http://ucl.ac.uk/ioe/departments-and-centres/departments/education-practice-and-society/science-capital-research/science-capital-teaching-approach) 🚀



If you have the opportunity, consider running a STEM club or curiosity lab. You can find supporting resources at [stem.org.uk/stem-clubs](http://stem.org.uk/stem-clubs) 🚀







A fantastic way to encourage students to take an interest in STEM is to introduce transferable skills used by those working in STEM-related jobs.

These skills will strengthen positive attitudes and reduce stereotypes of those working in the field.

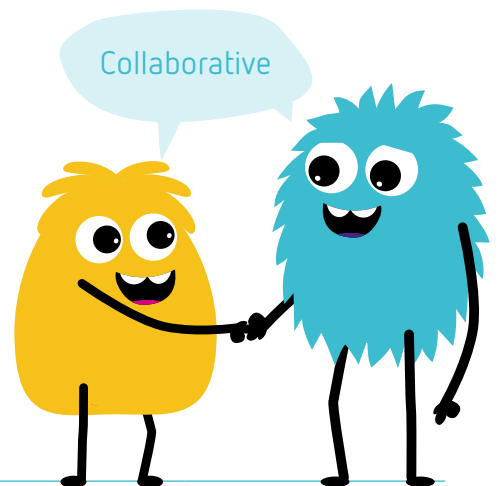
You could, for example, engage students in this **STEM Person of the Week** ✨ activity from NUSTEM at Northumbria University. Ask students to identify what attributes people working in STEM need. These might include being observant, creative, patient, good at communication, or curious. Look out for the skill set tags for each activity in this pack.

See the table below for the complete list of skills developed by NUSTEM to use as a talking point or to share with other teachers. Or, as a little bit of motivation, why not award each of the students with a certificate for a STEM skill which they demonstrate very well during the Week?

**Get students leading the way**

A great way to encourage students' interest in STEM is by letting them lead the way. Here's how you can help them along:

- **Encourage students to run their own activities** during British Science Week. They could either run activities for other members of the class or run some CREST at home activities with their family, taking photos back to present to their class. Check out the CREST resource library for inspiration: [secondarylibrary.crestawards.org](https://secondarylibrary.crestawards.org) ✨.
- **Get students to research** how connections have influenced the way we live our lives today and then write a report for the school newsletter or website.
- **Encourage students to design** and create their own display, such as a display of scientists through time. This could be a photo exhibit that emphasises the diversity of scientists, and which helps to overcome the 'scientist in a white lab coat' stereotype.
- **Get students to run their own CREST projects** and then use them as inspiration for a mini science fair in class. There are lots of handy CREST resources on the website: [library.crestawards.org](https://library.crestawards.org) ✨.



|           |              |            |                |               |
|-----------|--------------|------------|----------------|---------------|
| Observant | Open-minded  | Committed  | Curious        | Logical       |
| Creative  | Imaginative  | Patient    | Self-motivated | Collaborative |
| Resilient | Communicator | Passionate | Hard-working   | Organised     |

## TAKE IT HOME: SUSTAINABLE SOLUTIONS



This activity explores the connection between industrialisation and sustainability. Your challenge is to come up with an idea for a sustainable start-up business linked to your local community.

🕒 2+ hours

**Skill set:** Curious, Imaginative, Open-minded

### 📦 Kit list

Access to computers for internet research

Writing / drawing materials



🌟 This activity is part of the Sustainable Solutions CREST Discovery Award. View the pack here.

### 📖 Instructions

- 1 Research the effects of climate change. How might this affect your community in the future? How could you use STEM to solve these problems?
- 2 Your start-up business must be either a **PRODUCT** or a **SERVICE**.
  - a **Design a product:** Think about products that you use regularly. Are they environmentally friendly? Do they have a lot of packaging? Are they disposable? If not, can you think of an alternative? Will your product be made using sustainable materials? You could research how to use local, recycled or upcycled materials.
  - b **Design a service:** Think about services you use on a regular basis. Could you think of a way to offer environmentally friendly transport? Or a sustainable restaurant that produces no waste? Or an app that helps people to reuse things or buy things locally? Could you provide locally generated energy?
- 3 Create a poster or slides showcasing your start-up business.

### ➤ Next steps

This activity is part of the Sustainable Solutions CREST Discovery Award. You can view the full activity pack here: [bsa.sc/CREST-Discovery-Sustainable-solutions-pack](https://bsa.sc/CREST-Discovery-Sustainable-solutions-pack) 🌟

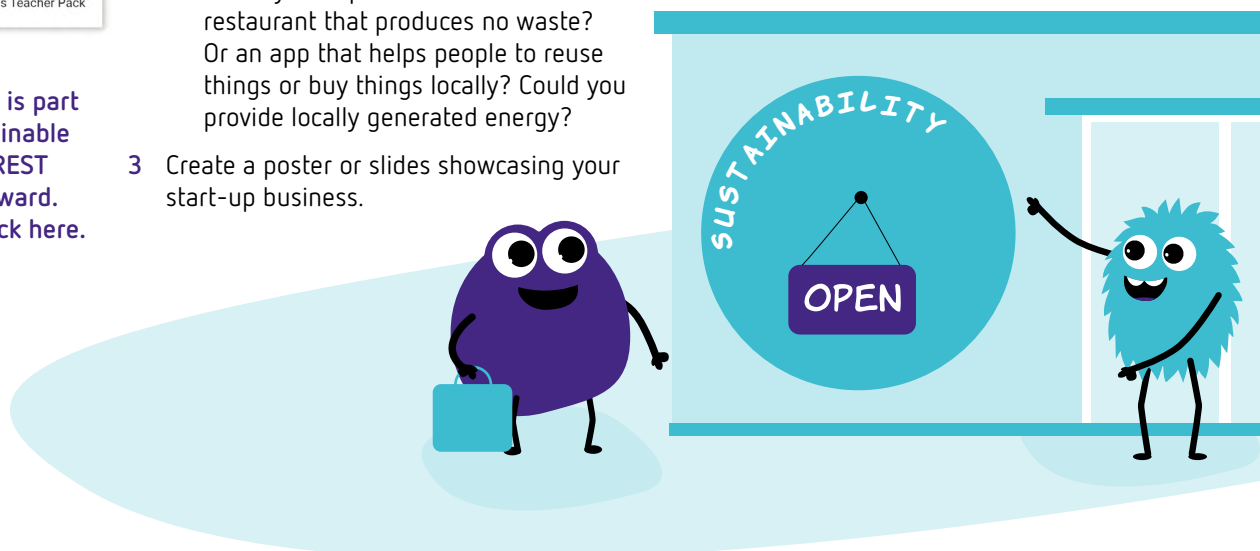
If you are an adult wanting to run CREST Awards with your students, visit the website for advice on how to get started: [crestawards.org](https://crestawards.org) 🌟

### 🏠 At home

Present your start-up business to your friends/family. Do they have any feedback to help improve your product/service? How do businesses collect feedback on their products/services?

### ↔ Career options

If you enjoyed designing your sustainable start-up business, then you may be interested in a career in engineering. Engineering jobs cover a wide range of topics from renewable 'green' energy to providing clean drinking water. Engineers need to be creative, good at problem-solving and data research.



# TAUGHT BY TECHNOLOGY

This activity looks at the connection between humans and technologies. Artificial Intelligence (AI) in education generally focuses on identifying what students do and don't know through testing, and developing personalised curricula based on students' specific needs.

Your challenge is to conduct an investigation comparing and evaluating AI powered education apps.

🕒 5+ hours

**Skill set:** Curious, Logical, Resilient



## 📦 Kit list

Access to computers for internet research

Access to iPads/ devices with relevant apps



## 📖 Instructions

- 1 Start by choosing either a musical instrument (e.g. flute, guitar) or a language (e.g. British Sign Language, French).
- 2 You now need to find some apps that teach you how to play your chosen instrument or speak your chosen language. Do some research online and pick at least two apps to compare.
- 3 Recruit participants for your experiment. There will be lots of variables in your experiment. Where possible you should try to control these, or make sure you are only changing one at a time.
  - a Try to find people with no previous knowledge in the subject, so that everyone is starting from the same point.
  - b Try to make sure each group has a similar number and type of participants.
- 4 Before starting your experiment, make sure you have planned how you will measure your results and how you will keep your test fair.

## ➤ Next steps

This activity is part of the Machine Learning CREST Bronze Award developed in partnership with the Royal Society. You can view the complete resource pack and full instructions here: [bsa.sc/CREST-Bronze-Machine-learning](https://bsa.sc/CREST-Bronze-Machine-learning)

If you are an adult wanting to run CREST Awards with your students, visit the website for advice on how to get started: [crestawards.org](https://crestawards.org)

## 🏠 At home

How do you think educational apps compare to learning from a teacher? Do you think educational apps should be used more in the classroom?

## ↔ Career options

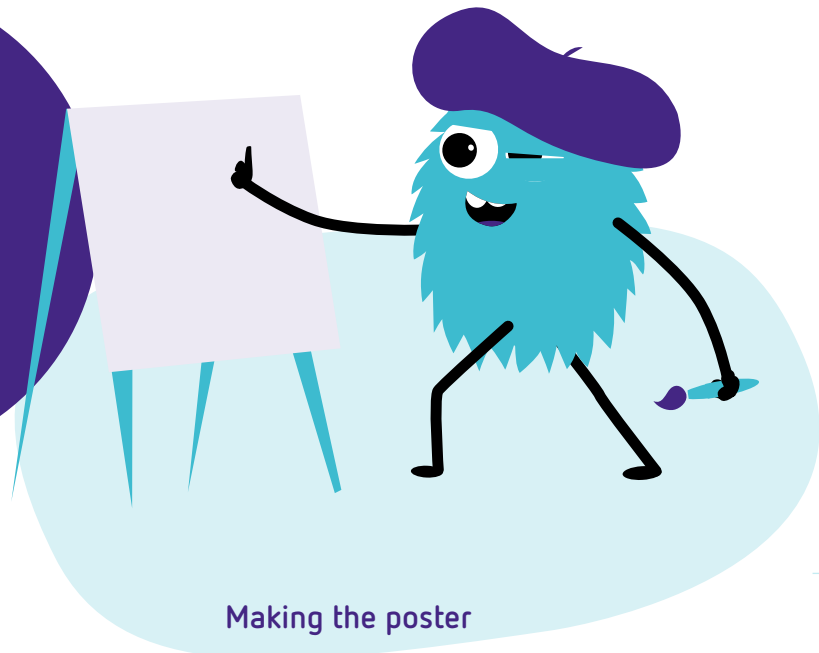
Software engineers build computer programmes that allow the user to carry out specific tasks, such as adding something to an online cart. This requires a good knowledge of computing and plenty of patience!

Data scientists analyse trends in data and use these insights to help machines work better.

# POSTER COMPETITION



Get creative and enter British Science Week's annual poster competition. You can make your poster about any 'Connections' in science you like be in with the chance to win an array of prizes. Each school can enter the five best posters!



## Kit list

Paper (A4 or A3)

Creative materials, such as:  
pens  
pencils  
scissors  
glue  
watercolours  
paints  
crayons  
felt  
thread  
wool  
foil  
clay  
string  
beads  
stamps  
foam  
pompoms

## Instructions

Investigate and imagine 'Connections' and everything that makes this theme special. Here are some topic ideas to get you started:

- Think about your personal experience of connections – from studying the connection between eco-friendly choices and a cleaner planet, to connecting with a classmate to learn how working with others can help people overcome challenges that they thought they could not do! How has it helped you to become stronger, braver, kinder, or more accomplished?
- How do you think connections impact the world? Consider the family tree that connects all living creatures, how your body parts are connected, or even how internet connection is changing how we communicate. What are examples of good connections?
- Can you think of people you have connected with who have helped or inspired you? Perhaps you could create a portrait of them to show this?

From the learning of new skills to the development of places and ideas that enable us to do things more efficiently in our everyday lives, connections are everywhere!

## Making the poster

Once you've done the thinking, it's time to get creative! Posters must be A4 or A3 in size and you'll need to be able to take a photograph of them so it can be sent to us online for judging. You can use pop-up pictures, pull out tabs or use materials such as pencils, paints, crayons and paper to create your posters.

## Submitting the poster

Posters will be judged on creativity, how well they fit the theme and how well they have been made or drawn, and how engaging they are. Once your poster is complete, take a photo of it and give it to your teacher to consider for entry.

## Next steps

Celebrate! For more details, along with the full set of poster competition rules and tips, check out our website:

[britishscienceweek.org/plan-your-activities/poster-competition](https://britishscienceweek.org/plan-your-activities/poster-competition) ✨



Look out for the activities in this pack marked with a paintbrush symbol, they can be a source of inspiration!