

1 Talk about science outside of science lessons

Science doesn't have to be confined to science lessons! The more it is talked about and blended into other lessons (and school life more generally) will demonstrate to the children that science is part of everyday life and conversations.

For example:

- Watch and discuss Newsround and Reach out reporter in early morning or form time.
<https://www.reachoutreporter.com/>
- Use science articles from First News or publications like The Week Science and Nature in lessons other than science, as well as science-based comprehensions and writing tasks.
- Profile 'science' books you or they might be reading like Itch by Simon Mayo or The DNA detectives by Dr Mandy Hartley.

2 Use real life examples in your science lessons

Where you can use contemporary and real life examples of scientists and research. Try to incorporate as many examples in lessons but also include examples from the work of scientists such as Science for Everyone scientists and STEM Ambassadors.

Example:

- Use current affairs - News – First News, Newsround, Reachout Reporter
- Invite guests – perhaps parents or scientists you might have contact with. Teams or Zoom have made this easier to do!
- “Publish” work e.g. in class blog, website, flyers so that their findings have a real purpose and replicate how scientist publish work.

3 Use examples that link to children's experiences

Find out about what the children are interested in with tasks like:

- 'A scientist I know' poster homework (could be relative, TV scientist, from a book)
- 'Science and Me' - homework poster – how science affects me
- Science selfie whole school display – great for engagement and raising profile with families.

4 Try to avoid using examples that focus on stereotypically male or female hobbies or roles

It is easy to unintentionally reinforce career stereotypes by showcasing roles that are typically seen as male or female. Where possible try to show a balance showing both genders in a role or where possible flip the stereotype on its head.

For example:

- Female construction workers and engineers
- Male nurses
- Female computer programmers
- Male research technicians
- Male and female professors

Get inspiration from books such as Good Night stories for Rebel Girls, and Blue Broccoli and Nanobots. <https://www.awesomecareerbooks.com/blue-broccoli-and-nanobots>

Have a class discussion about whether some jobs were ‘for boys’ or ‘for girls’ it can lead to fruitful discussions. For example in a class experiment with upper primary students, when asked the above question, most students understood that any job could be done by boys or girls, but that some had more men/women in the role. This led to really good discussion especially amongst the boys.

5 Challenge and avoid language that is gender biased, negative or discriminatory

Include in staff meetings a session on how influential the language we use is and the possible impact it may be having on your children when talking about STEM.

Examples of negative comments include:

“I didn’t like science at school”. “Maths is so hard”. “Maths is different now”. “You’re so clever – I was useless at science at school”. “You’ll have to get your Dad to help you as I’m useless at science.”

Also consider the impact of gender-biased feedback – both oral in class and written for homework. Girls are more likely to get feedback about their quietness, good behaviour, neatness of work and prettiness of presentation, which makes them more likely to be made behaviours monitors and to prioritise the way they present their work over the content. Conversely, boys are more likely to be commented on their effort and actual content of their work.

6 Give examples of careers that use the same scientific skills that the children are using

To break the down the stereotype that science can be hard or complicated, highlight the skills that scientists actually use. Things like observation, logical thinking, team work, organisation, creative problem solving.

For example:

- Use the Science for everyone scientist challenges
- Refer to blue broccoli and nanobots (<https://www.awesomecareerbooks.com/blue-broccoli-and-nanobots>)
- Take a look at the superhero scientists (<https://www.ase.org.uk/bookshop/superhero-scientists>) for inspiration

7 Use a variety of questioning techniques in lessons

We probably all fall into a routine of using the same questioning strategies in our lessons, but that may not suit every student in the class, why not mix it up a bit?

For example:

- **Whole Class response with mini whiteboards**
Pose a question, have pupils write their answers on their boards and show you their answers, then quickly check and discuss the responses.
- **Drag out the wait time**
Once you have asked your question, allow adequate wait time before taking answers from pupils – they need time to consider their responses and will encourage the less confident students to get involved.
- **Group discussion**
Get the students to discuss the question in a group and then taking one idea from each group/table has worked for me in the past
- **No hands up**
Rather than all students put their hands up choose pupils to answer a question based on your knowledge of the students - don't confuse this technique with randomly picking students.
- **What could it be?**
Rather than focus on what the right answer is, ask the “what do you think it COULD be” or “what do you think the answer MIGHT be to” these questions are incredibly powerful in encouraging more students to put up their hands and participate in discussions.

To delve a bit deeper, use the [IOP classroom engagement observation form](#) to help you assess your practice and which questioning techniques are encouraging girls and quieter students to participate in class.

8 Use resources that show a range of diverse scientists

There are a lot of resources available now that highlight a range of diverse scientists, you just need to know where to find them.

Some examples include:

- Science for everyone Scientist profiles
- Pearson's Scientist of the month
<https://www.pearson.com/uk/educators/schools/subject-area/science/why-science-matters/scientist-of-the-month.html>
- 7 STEM role model posters (in 7 languages)
<https://medium.com/nevertheless-podcast/stem-role-models-posters-2404424b37dd>
- Diverse representation in Science: Book corner recommendations
<https://thatscienceladycom.files.wordpress.com/2020/11/diverse-representation-in-science-book-corner-suggestions-1.pdf>
- Research Champions, beautifully illustrates stories about diverse scientists:
<https://research-champions.com/stories/>

Remember, when you do discover a good one, remember to share it with others by creating a shared drive or a padlet board like this:

<https://wimbledonhigh.padlet.org/alexfarrer/1snfac2oapc94b0u>

9 Rotate roles in your group work

It can be easy for the most confident students to always take the lead in group work where the quieter or less engaged students hang back. Allocate roles in group work and make sure that everyone gets to take the lead in an activity and but also experience a more supporting role to ensure they use their listening skills.

These roles could be:

- Team leader
- Presenter / communicator – feedback their ideas to class
- Scribe / recorder – write down ideas

10 Think about who in the classroom gets more teacher time and whose interests are being followed and referred to

Reflect on who are the students that regularly put their hands up and answer questions, or regularly have their stories and opinion heard. Are there students that want to speak up but don't? Can you encourage them to speak up by relating the topics to their interests be it gymnastics, animals, football, the latest computer game or TV programme?