Use Your Classroom to Promote Diversity in Science

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Primary Science Teaching Trust

By the end of the session, we should:

- have opened up a discussion around Diversity and inclusion in our science curriculum.
- be aware of possible avenues we could be exploring in our settings.
- be more aware of the importance of diverse role models.
- have signposted good quality resources that are easy to add to your curriculum while enriching your science lessons.

Introducing scientists to primary children

Why?

- Engagement
- Relevance
- Career
- Character building
- Science capital

Trew, A. J., Shallcross, R. and Redhead, K. (2020) Introducing scientists to primary children: Does this always enhance children's science capital? *Science Teacher Education*, **88**, 25–33. www.ase.org.uk/resources/science-teacher-education/issue-88/introducing-scientists-primary-children-does-always

Real issues, real questions

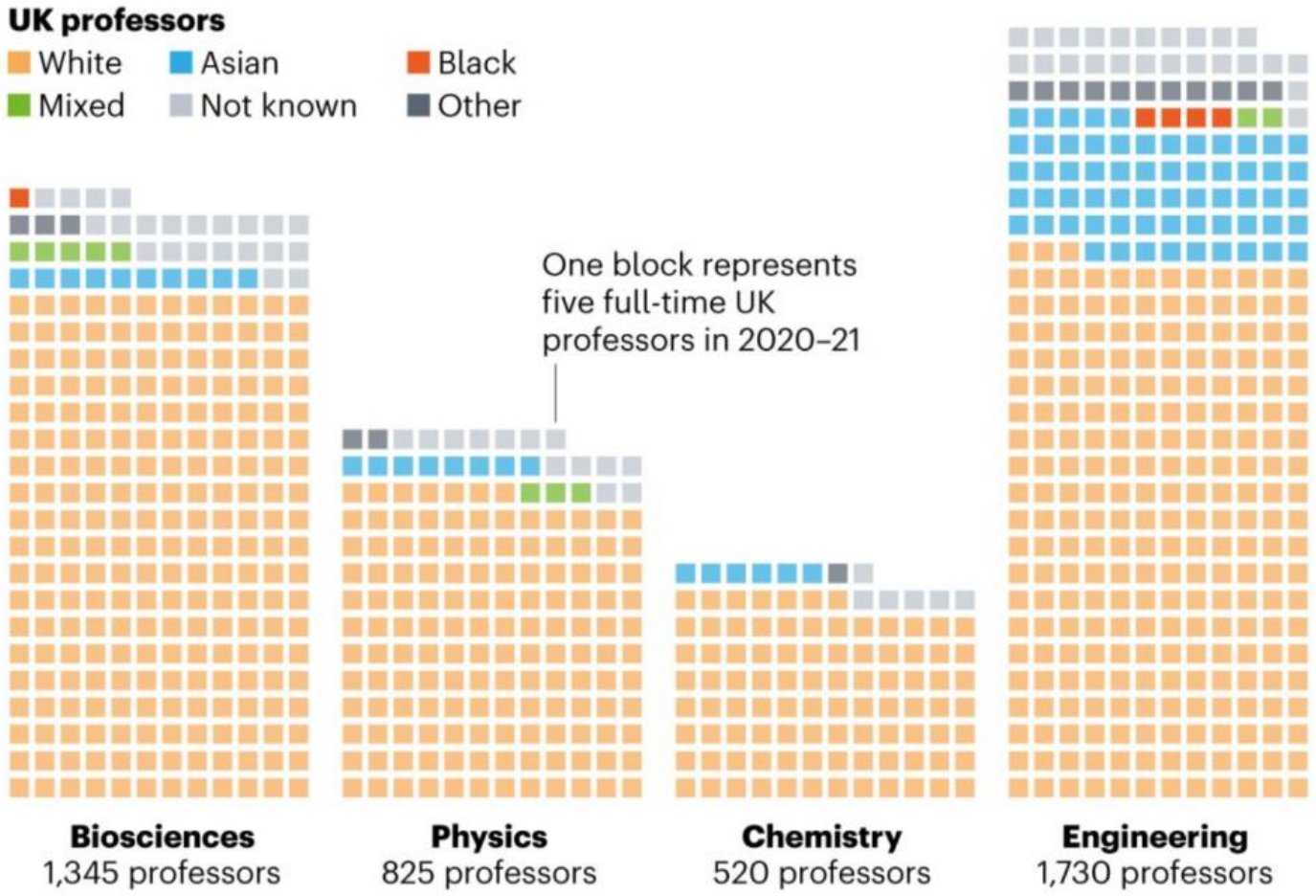
Who are the role models?

Where are the role models?

Why are there so few role models?

Real issues, real question

In 2018, Robert Mokaya discovered that he was the only Black chemistry professor in the United Kingdom. For a decade, he'd assumed there were others who he hadn't met — until investigations by the UK Royal Society of Chemistry revealed his lonely status. **"Somebody said to me, 'You're an endangered species. When you retire, there won't be any,'" he says. "It is a terrible statistic."**

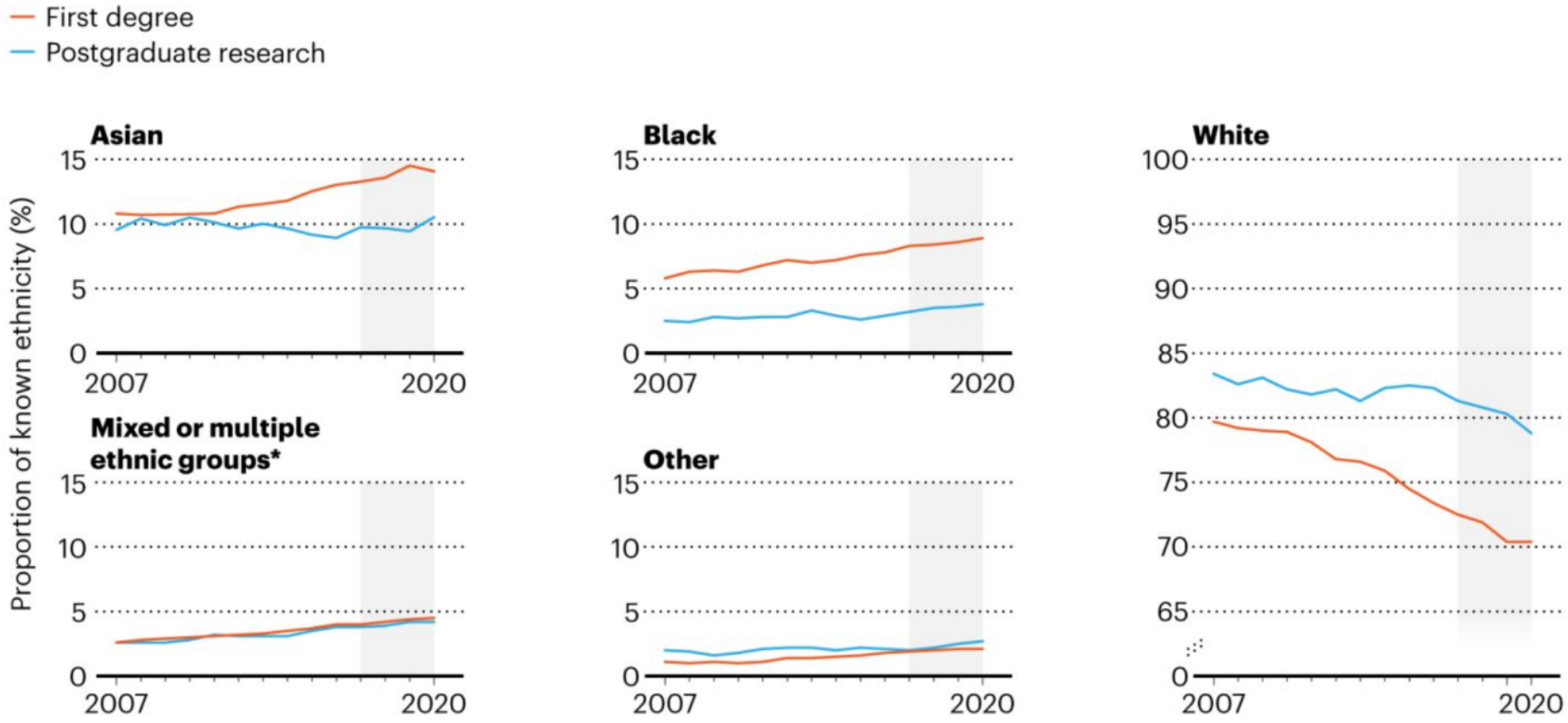


https://www.nature.com/immersive/d41586-022-04386-w/index.html

Needing to see role models is not confined to children

‘prospective students feel they won’t belong on a course because they don’t see people like themselves doing it, or because its contents don’t reflect their culture or the contributions of people like them. ‘

“I haven’t met a single Pakistani female principal investigator or lecturer, and I’ve been in academia for a decade,” she says.



A Scientist Just Like Me

Primary Science Teaching Trust

A scientist just like me

Telma G. Laurentino

Evolutionary Biologist

Primary Science Teaching Trust

A scientist just like me

Hi there! I am Telma Laurentino – an evolutionary biologist

Where do I work?

I work in the USA, at Berkeley University! I have worked in Portugal and Switzerland too. Scientists move around a lot so we can learn from different places!

What did I like doing when I was at school?

I always loved to read and to play outside with friends, touching the world around me and wonder about how nature works!

What do I like doing in my spare time?

I love to go outside, explore nature and photograph animals and plants. I also love crafting with natural materials like feathers, rocks

A scientist just like me

What do I do as an evolutionary biologist?

I study how different animals adapt to changes in the environment. For example, I measure differences in the colour of lizards that live in white desert sands. I search for differences in their genes which might have allowed them to survive in such an extreme environment.

How does what I do make the world a better place?

Knowing about nature allows us to protect it. Knowing how other species adapt to changes in their native habitat, teaches us about evolution and the consequences of altering or destroying habitats.

A scientist just like me

What I like about my job

I love that I am constantly learning new skills needed to unveil nature's secrets, and that I get to study amazing places like the Amazon. I learn a lot from the local friends I make, and I get to teach others about evolution in our wonderful world!

Challenges I have faced

I have dyscalculia, so I need more practice than other people for the maths I need for laboratory work, to measure and calculate quantities, or when I am doing statistics on my nature data. Sometimes I can do it by myself, sometimes I ask help from my colleagues.

A scientist just like me

If you want to be an evolutionary biologist, you need:

- **to be creative** and enjoy natural wonders and thinking about how and why living beings behave the way they do
- **to be curious** and to turn your ideas into testable scientific questions
- **to be a team player** as working with your colleagues really helps to find the best methods to study those questions in detail!

A scientist just like me

Discussion time

- Would you like to be an evolutionary biologist like Telma Laurentino?

  Why? Why not?

- What skills and interests do you already have that would help you become an evolutionary biologist?
- What new skills and knowledge would you need to develop?

A scientist just like me

Free supporting resources for evolutionary biology

The Big Jurassic Classroom - resources and information to support teachers with using their local environments to inspire interest in the UK's geological history. The resources include exciting activities for learning about rocks, fossils and evolution.

I bet you didn't know... articles use cutting-edge science research as a context for learning. Teacher Guides describing the research and activities and investigations for children can be used as classroom presentations. See:

- Some mammals have unusual backbones
- Bees and caterpillars can change the evolution of plants
- Evolution of life in cities
- Miracle healing could come from the axolotl

Created by the Primary Science Teaching Trust

Primary Science Teaching Trust

A scientist just like me

FILTER RESOURCES

Job Type

- Animals
- Plants
- Environment and Climate
- Materials
- Rocks and Fossils
- Forces
- Electricity
- Light and Sound
- Space
- Computing
- Engineering
- Medicine
- Research
- STEM Outreach and Communication

Gender

- Male
- Female
- Non-binary

Ethnicity

- Asian or Asian British
- Black, African, Caribbean or Black British
- Mixed/multiple Ethnic Group
- White
- Any other ethnic group

LGBTQ+

- Yes

Disability

- Neurodivergence
- Visual Impairment
- Hearing Impairment
- Physical Disability

STEM Ambassador

- Yes

A scientist just like me

How could you use these slideshows?

- Science lesson
- PHSE
- Comparing multiple scientists in the same role
- Complete a job application for the role
- Assembly
- Careers week/Science week
- Take it further……extension
- Guided reading

New : A Series of Videos

Helen Mason- Solar Physicists

Kelsey Byers- Evolutionary biologist

James Mortimer – Photo Chemist

Candy Jiang - Analytical Chemist

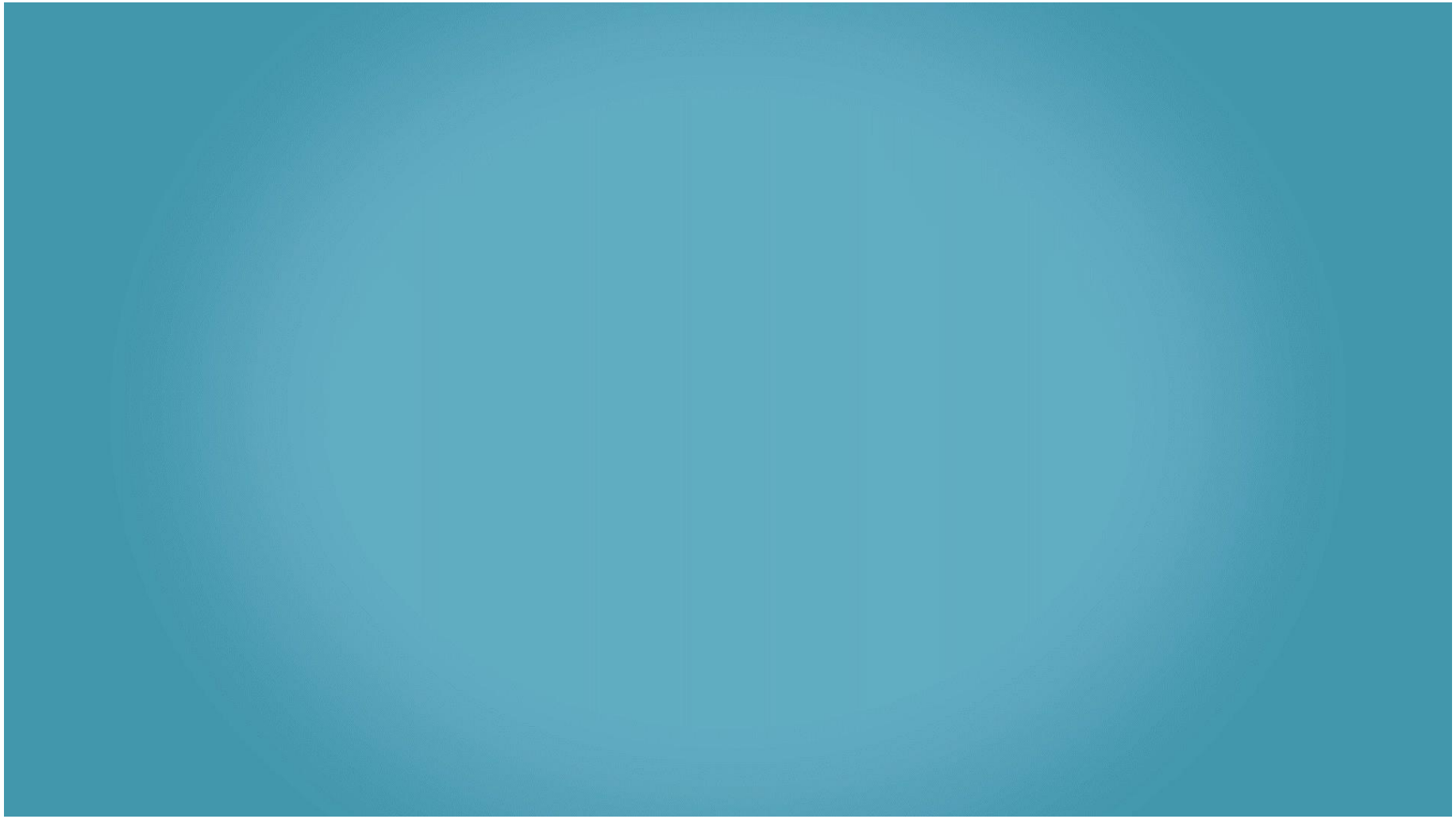
Emily Charlton - Immunologist

Broc Drury - Immunologist

Rafsan Choudhary- Mechanical Engineer

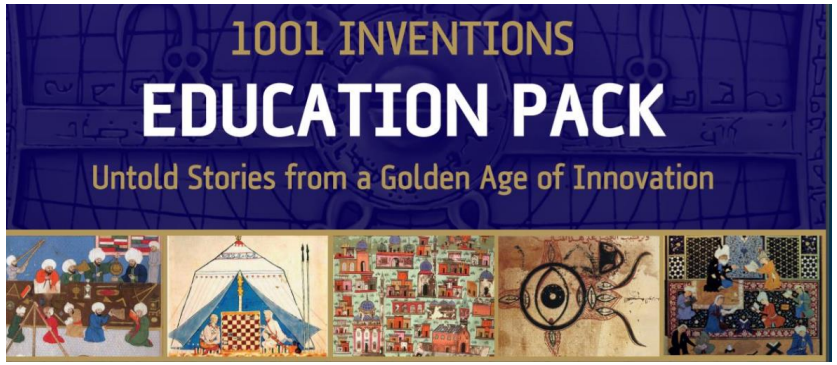
Pearl Agyakwa -Materials Scientist

Dr Pearl Agyakwa – Material Scientist



1001 Inventions

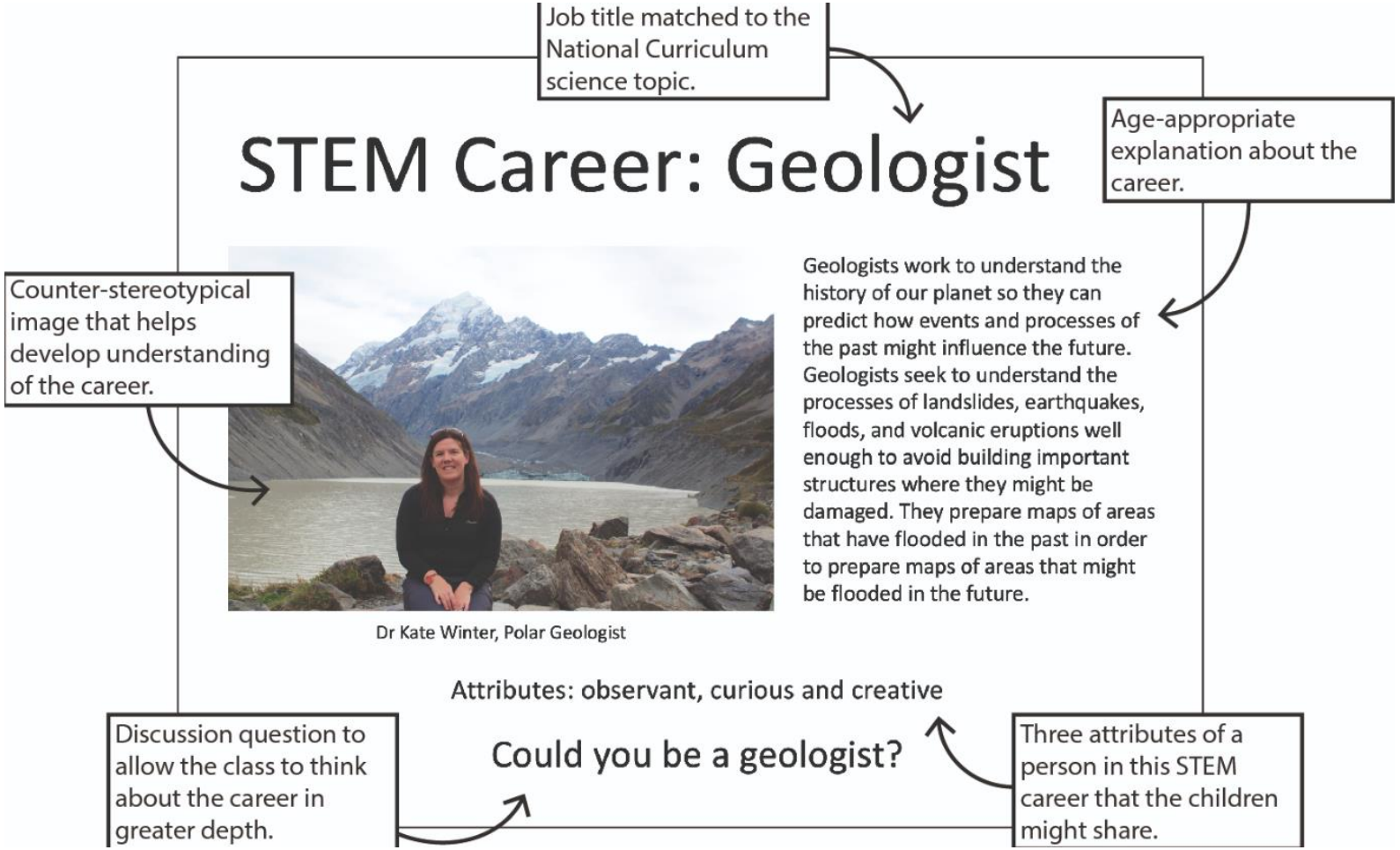
Whole school assembly showing Library of Secrets film
Focus activities and scientists for each year group.
Quiz sent out to families
Competition to make a model of the Elephant Clock
KS1 focus – Windmills
Y3 – Perfumes and stable structures
Y4 - Ink and paper, soap
Y5 – moon phase boxes, clinometer
Y6 – flying machines, toothpaste
Celebration Days
Exhibition of activities and scientist displays
Lush Company – bath bomb making with parents and children
Mehndi
Calligraphy workshop
Hand massage and manicure
Food



https://www.1001inventions.com/wp-content/uploads/1990/01/1001iEducationPack.pdf

https://www.1001inventions.com/

NUSTEM –Primary Careers



https://nustem.uk/primarycareers/

https://wearetechwomen.com/wp-content/uploads/2022/10/women-in-tech-survey-2021-ipsos.pdf

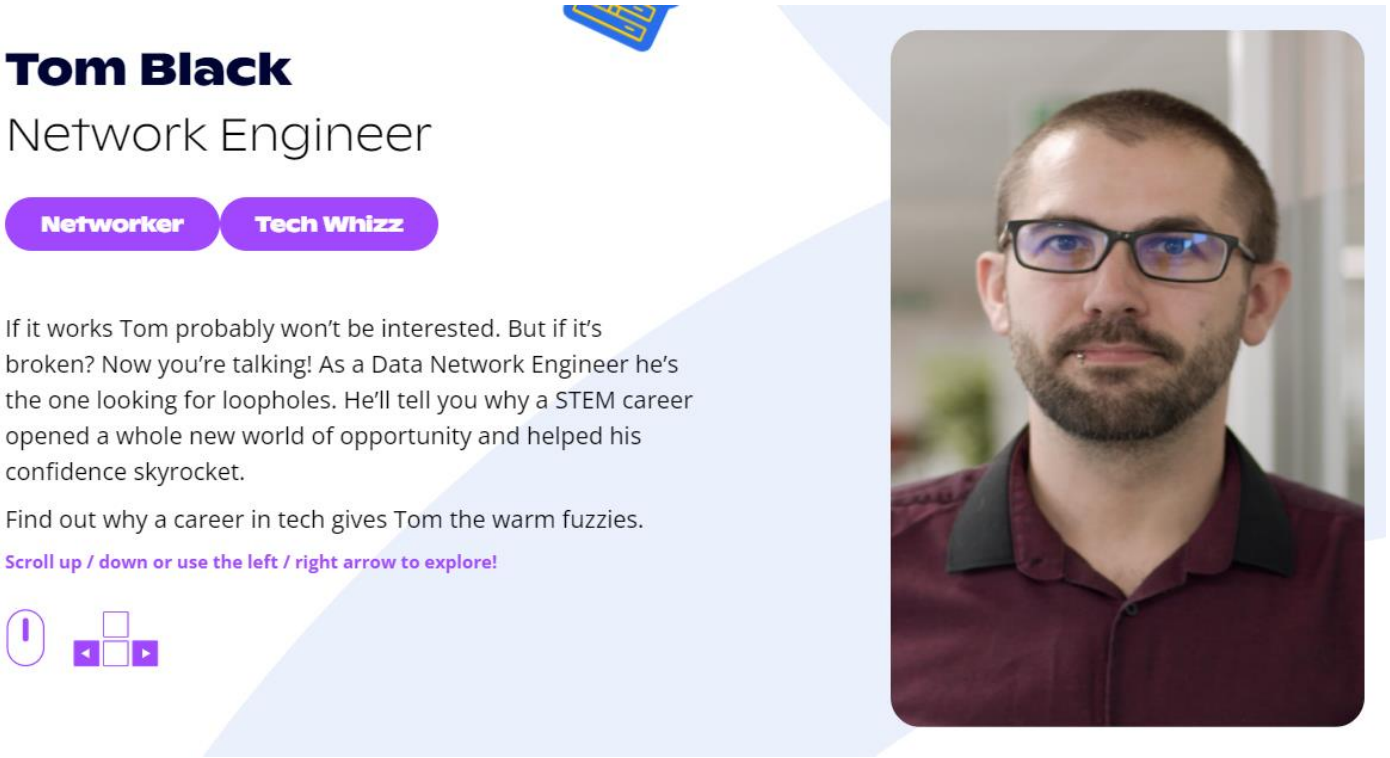
Smashing Stereotypes

https://www.britishscienceweek.org/plan-your-activities/smashing-stereotypes/

https://wearetechwomen.com/wp-content/uploads/2022/10/women-in-tech-survey-2021-ipsos.pdf

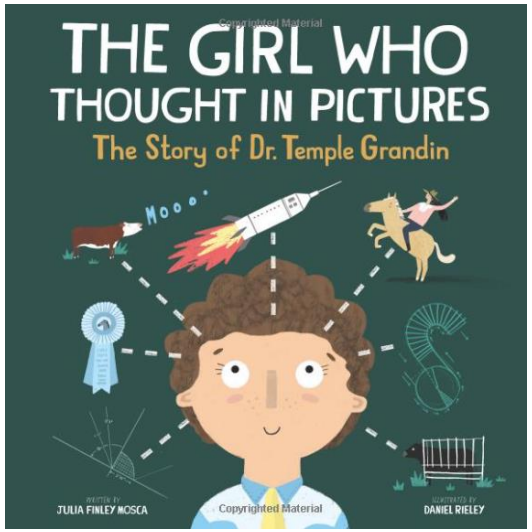
People Like Us

People Like Us - a game-based resource for children aged 9-14 featuring films of diverse role models from ordinary backgrounds, all of whom had to overcome challenges at school or at home and now have found a job they love in STEM.



https://peoplelikeus.io/

Other Useful Resources

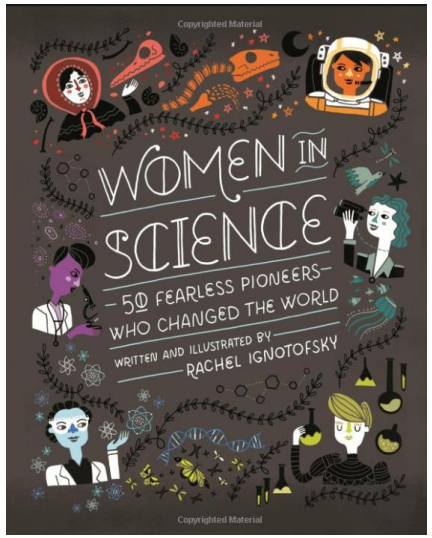


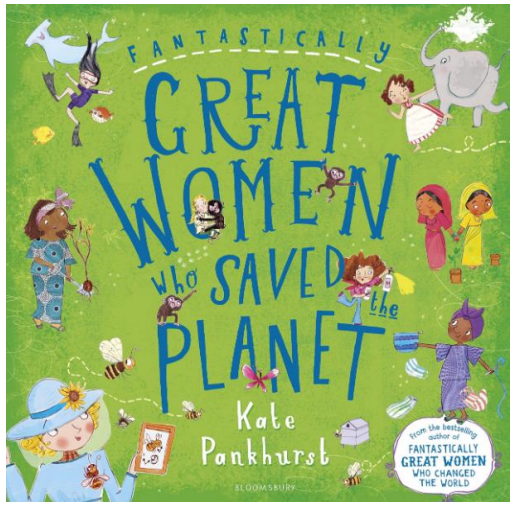
St Mary's University Twickenham London

why & how?

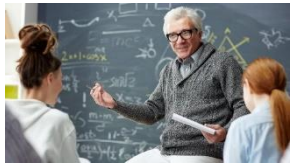
ALEX SINCLAIR, AMY STRACHAN, DR ALISON TREW

A Primary Science Teaching Trust Resource





Why Change what we have been doing?



- Prof Donald, from the University of Cambridge, told the Commons Science and Technology Committee it was *"relevant"* that *"most of the images one sees of scientists, physicists, are white males".*

- *"If you are black or if you are a woman, you don't see yourself fitting in*," she said.

- Teachers should try to **"*actively counter*"** messages from wider society that may discourage girls and children belonging to ethnic minorities from certain subjects, she added.

https://www.bbc.co.uk/news/education-61494903 (19/05/2022)

Why Change what we have been doing?

House of Commons Science and Technology Committee

Diversity and inclusion in STEM Fifth Report of Session 2022–23 Report
(Ordered by the House of Commons to be printed 1 March 2023)

In schools, children's experiences in the classroom shape their life choices and outcomes. In our view, it is important that all children are able to see themselves in what they learn from an early age.

A diverse national curriculum—that contains female scientists, for example—is one low-cost way of ensuring this.

Similarly, the careers advice and support pupils receive from the earliest years should promote diverse and inclusive role models.

Children should see themselves in who they aspire to emulate, as we heard that those who were able to see themselves as scientists or engineers were more likely to pursue the required subjects.

- https://publications.parliament.uk/pa/cm5803/cmselect/cmsctech/95/summary.html

https://www.britishscienceassociation.org/Blog/bsa-response-to-diversity-and-inclusion-in-stem-inquiry