



Science Capital

Skills

Reputation

STEM Careers

Community

Raising  
Aspirations

Ambassadors

Staff  
Development

# Tees Valley Primary Science Capital Guide

## Teacher CPD Activities



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# CPD Activity 1

Understanding science capital



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# Discussion: A school's journey – what next?

## Can you suggest possible actions for this school?

Teachers say they 'do science capital' by engaging in Science Week and visiting a museum every year

Most staff indicate on an anonymous questionnaire that they don't fully grasp the meaning of science capital

A pupil voice survey indicates that children are not able to name many jobs which use science skills

Teachers feel more could be done to promote science learning at home and through events/organisations in the local community

Teachers report that though many children enjoy science learning some are disengaged; particularly those from less advantaged backgrounds

One teacher feels that children in her class perceive that a specific group of boys are the ones who are good at science

Each science topic has a 'key scientist' assigned to it but staff have commented there is a lack of diversity





# CPD Activity 3

Science capital topic planning

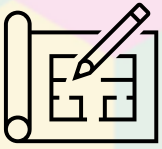


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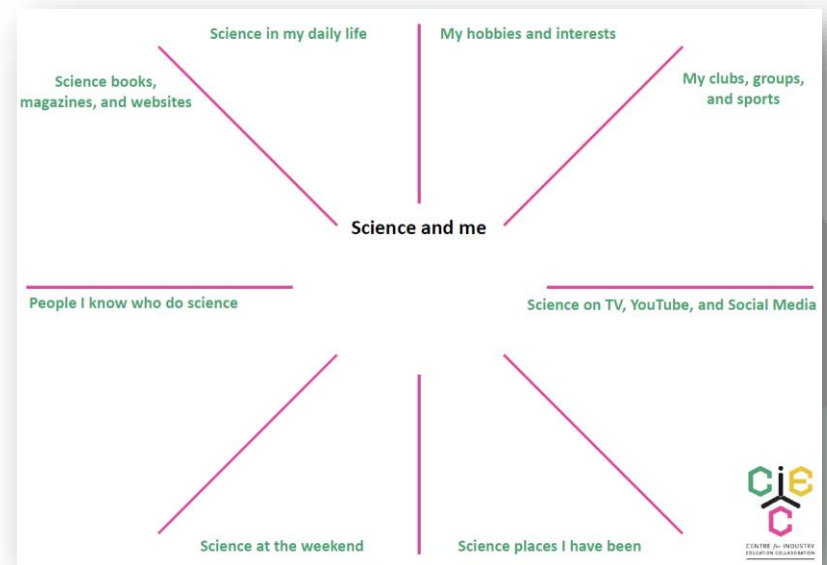


# Science capital topic planning

*Share Activity sheet 2: Science and me (topic focus)*

## Using the medium term plan for your next science topic, include:

- Your responses
- Information you know about your students





# CPD Activity 4

Who uses science?



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# Skills cards: Who does science?

*Share pre-cut cards from Handout 4: Science skills cards activity*

Discuss these jobs, interests, and hobbies. Sort cards to identify where links could be made to the science curriculum

Sports/fitness/training	Fashion/textiles/sewing	Hair and beauty
Gardening/floristry	Uniformed service	DIY
Nursing assistant and personal care	Animal care	Cookery and baking
Electrician	Construction worker	Joiner/carpenter
Doctor/nurse/physio	Chef/catering/hospitality	Mechanic
Personal trainer	Photographer/graphics	Painter/decorator
Musician/DJ	Pharmacist/first aid	Driver/transport





## Example: Sports fan

- Use of friction in design of specialist clothing, footwear, equipment, and surfaces e.g. running track, ice rink, skate ramp
- Properties of materials for sports clothing
- Nutrition required for optimum performance
- Exercise required to keep fit and build/maintain muscle strength
- Heart rate monitoring to keep track of athlete's health/fitness level
- Conditions for growth of grass on pitch







# CPD Activity 5

STEM careers learning in the primary classroom



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# Research STEM careers

## Share Handout 6: STEM Careers links to the curriculum

### A SCIENTIST JUST LIKE ME

Introducing children to a diverse range of scientists and people who work in science-related jobs



[Primary Science Teaching Trust – A Scientist Just Like Me](#)

### STEM Careers Links by Topic

Contents:	
Introduction .....	1
Plants .....	2
Animals (not including humans!) .....	3
Humans .....	4
Materials .....	5
Seasonal Changes (including weather) .....	6
Rocks, Fossils & Soils .....	6
Light .....	7
Forces .....	7
Sound .....	8
Electricity .....	8
Space .....	8
Earth Science & the Environment .....	9
Evolution & Inheritance .....	10
General Science Careers .....	10
Computer Science & Big Data .....	11
Geography .....	11
Engineering .....	12
Maths .....	12
Further Support .....	13

### [That Science Lady – STEM Careers Links](#)

Job title matched to the National Curriculum science topic.

## STEM Career: Geologist

Age-appropriate explanation about the career.

Counter-stereotypical image that helps develop understanding of the career.

Dr. Kait Winter, Polar Geologist

Geologists work to understand the history of our planet so they can predict how events and processes of the past might influence the future. Geologists seek to understand the processes of landslides, earthquakes, floods, and volcanic eruptions well enough to avoid building important structures where they might be damaged. They prepare maps of areas that have flooded in the past in order to prepare maps of areas that might be flooded in the future.

Attributes: observant, curious and creative

Could you be a geologist?

Three attributes of a person in this STEM career that the children might share.

Discussion question to allow the class to think about the career in greater depth.

[NUSTEM – Primary Science Careers Tool](#)

#### Sport

Engineers design and manufacture materials and equipment that help improve sporting performance.

- Wigwag developed a winter solution for the ski binding.
- Composite materials used to build super lightweight tennis rackets.
- Video Assistant Referee (VAR) is helping make football decisions more accurate and fair.
- Injectable carbon fibre saving kidneys in transplant operations.

Use your engineering skills to help improve the performance of your favourite sport.

#### Hair-Raising

From designing hair straighteners and make-up apps to creating formulas for personalised shampoos, there is science and engineering behind helping us look and feel good, whenever the occasion.

Did you know? The world's first 3D-printed skull transplant was recently performed by Dutch surgeons.

Just one example of how engineers are improving the products we use every day.

[www.tomorrowsengineers.org.uk](http://www.tomorrowsengineers.org.uk)

## Tomorrow's Engineers

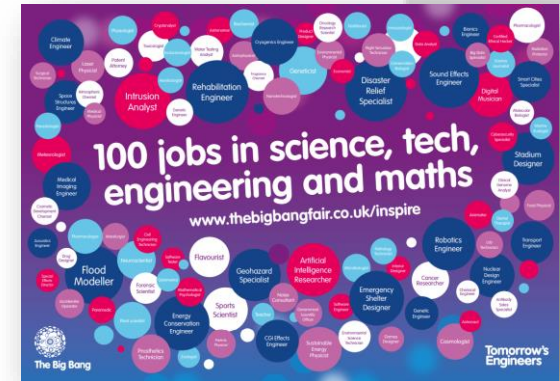
### Future Lifesavers

Surgical robots and advances in virtual reality are allowing surgeons to perform operations remotely.

Just one example of how engineers are improving healthcare.

[www.tomorrowsengineers.org.uk](http://www.tomorrowsengineers.org.uk)

[Neon Futures – Find your route into engineering \(printable postcards\)](#)



[Neon Futures – 100 jobs in STEM poster](#)



# CPD Activity 6

Identifying STEM advocates in the school community



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# Who are your local community STEM advocates?

Children's parents/carers and extended family members	Staff members with previous career experiences
School governors	Staff members' friends and family
Past children now in FE/HE/employment	Local companies
Colleges/Universities/Organisations	Local services e.g. dentist, GP surgery



Make a list



# How might your STEM advocates work with you?

Class visit to their place of work	In-person visit to the classroom
Video call Q&A with the class	Pre-recorded videos
Virtual site-visit	Live demonstration
Presentation slides including photographs of the person doing their job	Storyboard depicting a 'typical' day in their job



# Types of classroom interaction

## **Initiator of the activity**

- Set the scene or pose a challenge
- Present a 'problem' to the children
- Lead a discussion
- Role play

## **Advisor/consultant**

- Share experiences
- Support children
- Discuss how and why something is done in industry
- Compare classroom activities with real life examples

## **Audience/judge**

- Test quality of finished products
- Evaluate solutions
- Comment on the safety aspects
- Judge designs, investigations, competitions
- Award certificates
- Be an audience for presentations

## **Provider of information**

- Bring equipment
- Give examples
- Describe/show photos
- Offer relevant demonstrations



# Responsibilities

<b>Teacher/school</b>	<b>Both</b>	<b>Ambassador</b>
School visit risk assessment Provision of classroom equipment Behaviour management First aid	Agree and keep to time	Activity risk assessment Provision of specialist equipment

