



Careers in Initial Teacher Education

Training #3 – Employability characteristics
and role models

Delivered by

North East
Local Enterprise Partnership

 **Northumbria**
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**THE CAREERS &
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Introductions

- Joe Shimwell (Presenter)
- Carol Davenport (Host)

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What is CITE?

- Training package to support teachers to include careers related learning in their teaching.
- Three CPD sessions about different aspects of careers with associated 'gap tasks'.

Timeline of Activity

CPD 1

Careers Education and Unconscious Bias

12th May 2020

CPD 2

Career Aspirations in Primary School

21st May 2020

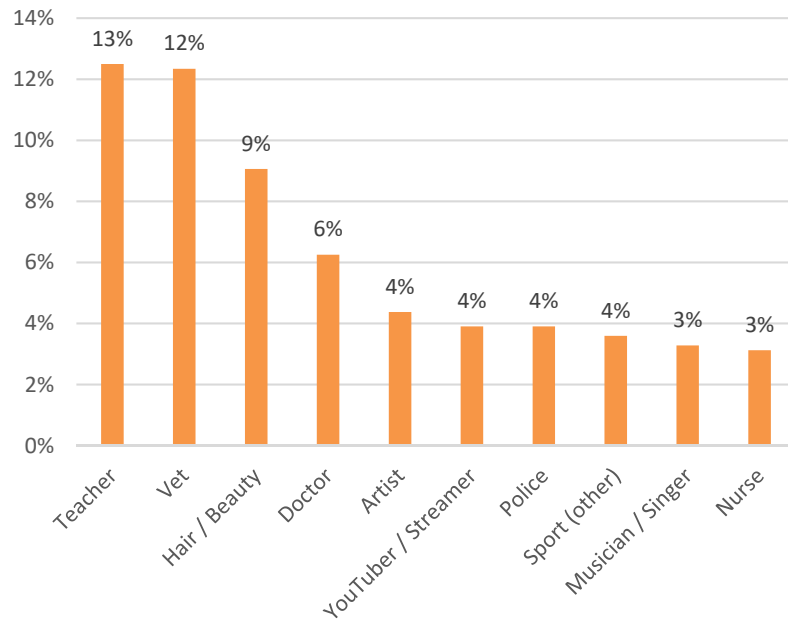
CPD 3

Employability characteristics and role models

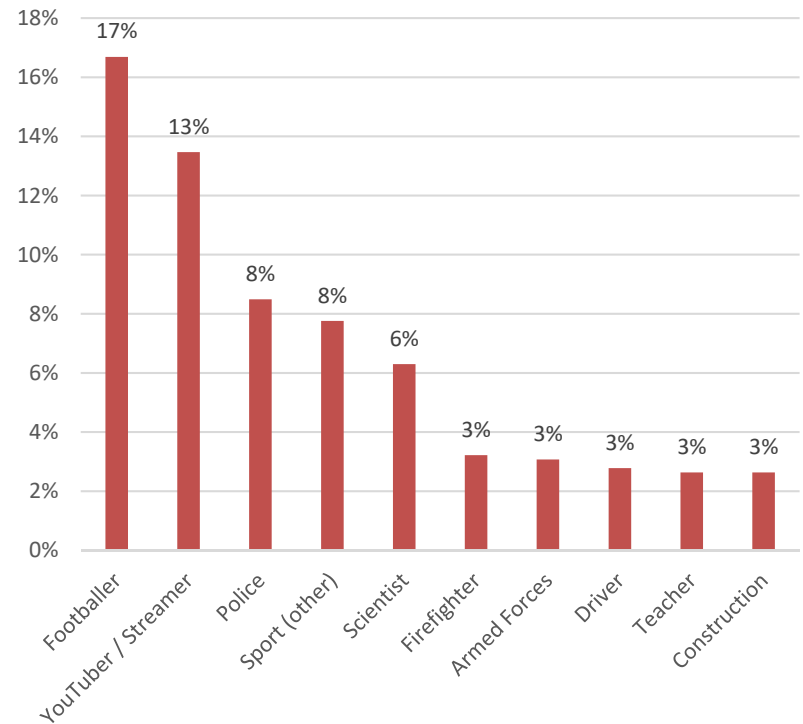
10th June 2020

Recap Session 2: Gendered Career Choices

The top ten careers aspirations for girls aged 8-11



Top ten careers aspirations for boys aged 8-11



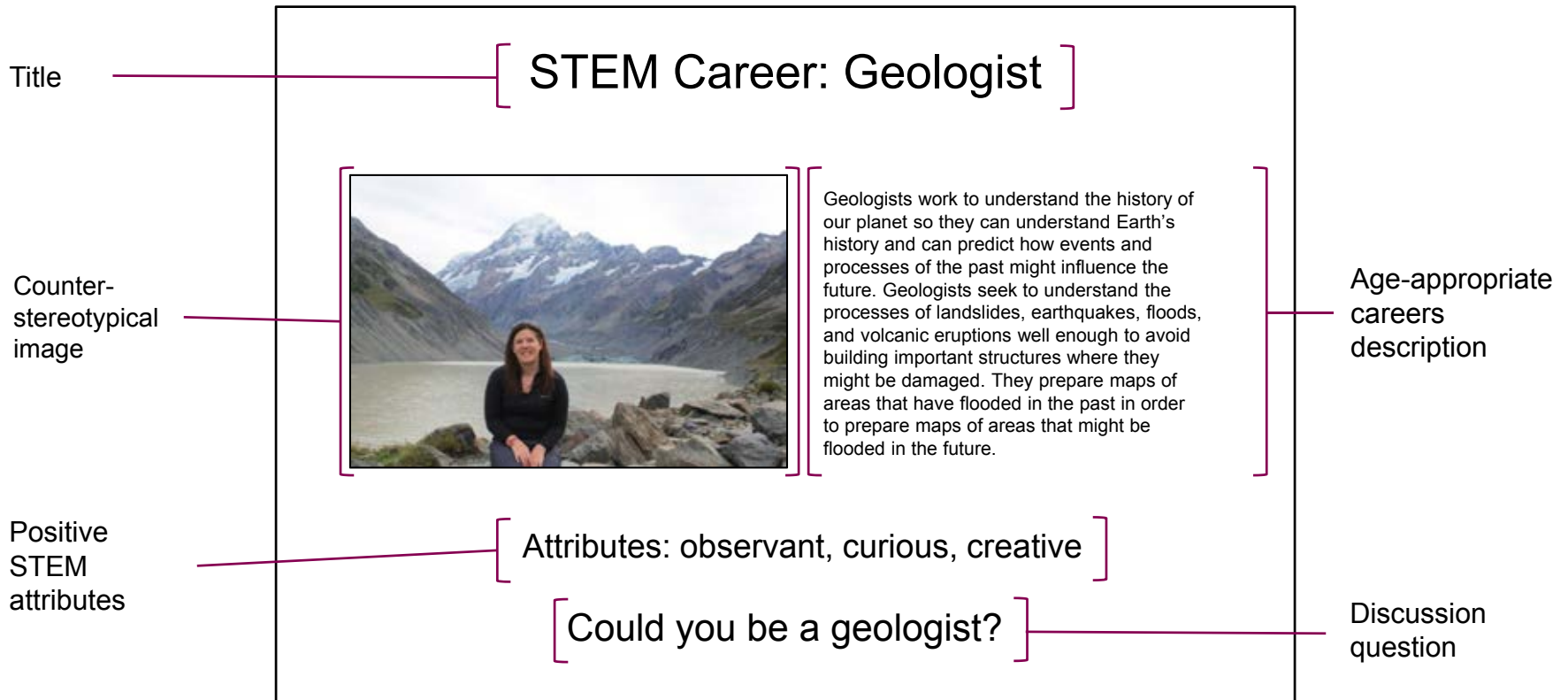
The benefits of contextualisation

“The term contextualisation describes the process of drawing specific connections between content knowledge being taught and an authentic environment in which the content can be relevantly applied or illustrated.”

“Contextualised learning helps students to develop deeper understanding that positions them to better comprehend abstract ideas, and see how they manifest in actual contexts.”

Giamellaro, 2014

Teaching using the Primary Careers Tool



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Employability characteristics

Finding different ways to describe people who work in STEM

Breakout 1 (5 minutes)

What six words would you use to describe a scientist?

Write down 6 words that come to mind when asked to describe a scientist.

Discuss the words with your breakout group and be prepared to feed back.



Scientists Rises, Pew Poll Shows ...
the-scientist.com



Male scientists more likely to describe ...
independent.co.uk



Six Ways To Spot A Scientist | Asian ...
asianscientist.com



Scientist - Wikipedia
en.wikipedia.org



Global Talent visa: New system to keep ...
bbc.co.uk



Opinion: Can Prizes Help Women Shatter ...
the-scientist.com



spot bogus science stories and re ...
theconversation.com



What Jobs Could I Do In Life Sciences ...
career-advice.jobs.ac.uk



leading practising scientists ...
timeshighereducation.com



Manly Scientists Discover Theoretical ...
thehardtimes.net



fast-tracking COVID-19 vaccine trials
medicalnewstoday.com



Would you trust scientists more if you ...
theladders.com



Scientist.com discovers the formula for ...
digitalcommerce360.com



Young Research Scientist Award ...
conferenceseries.com



scientist. What will my salary ...
theglobeandmail.com

What do children say / write when asked to describe a scientist?

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Draw a scientist test



Write down six words to describe a scientist.

- Nearly half of all the words chosen were categorized as ‘Stereotypes’
- Of the Stereotypes words, 60% described some form of intelligence (clever, brain box, genius, etc.)
- Girls were statistically more likely to use positive sentiments to describe scientists (24% for girls, 15% for boys)
- Very few gendered words were used (0.5%)

Breakout 2 (6 minutes)

Discuss the following findings from our research study:

- Nearly half of all the words chosen were categorized as 'Stereotypes'
- Of the Stereotypes words, 60% described some form of intelligence (clever, brain box, genius, etc.)
- Girls were statistically more likely to use positive sentiments to describe scientists (24% for girls, 15% for boys)
- Very few gendered words were used (0.5%)

Each group should choose someone (different this time) to feed back.

- mad
- brainy
- clever
- test tubes
- white coat
- nerdy
- special glasses
- boy or girl
- careful
- talented
- funny
- awesome
- hard-working
- observant

What characteristics are important to be successful in science (or STEM) careers?

Employability characteristics

- Collaborative
- Committed
- Communicator
- Creative
- Curious
- Hardworking
- Imaginative
- Logical
- Observant
- Open-minded
- Organised
- Passionate
- Patient
- Resilient
- Self-motivated
- Tenacious

Changing stereotypes: Scientist of the Week


- 5 week teacher-led, whole school activity
- Carefully chosen role models to reflect the diversity in the skills needed in the science workforce, and the people who work in science
- Teacher discusses the scientist with their class, and praise students for showing the attributes during the week.



STEM PERSON OF THE WEEK | **Holly East**
Marine Scientist

Holly is a marine scientist who specialises in coral reefs. She is passionate about her work and enjoys the challenges of exploring coastlines. Holly is creative and self-motivated which allows her to come up with and test out new ideas about how the oceans and coastlines have evolved.

passionate creative self-motivated

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STEM PERSON OF THE WEEK | **Guillaume Zoppi**
Physicist

Guillaume is a physicist who specialises in solar cells. He is open-minded which helps him work with new materials not usually associated with solar cells and is organised which allows him to explore lots of possibilities. When Guillaume feels his work difficult, he is resilient and refuses to give up until he has solved a problem.

open-minded organised resilient

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STEM PERSON OF THE WEEK | **Matthew Pound**
Palaeontologist

Matt is a palaeontologist who is interested in fossils and what they can tell us about the past. In his search for new ideas and information Matt need to be curious. He is also an excellent communicator as he has to share his scientific findings with others. Matt is committed to his work and travels all over the world in search of new ideas and research.

communicator curious committed

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STEM PERSON OF THE WEEK | **Leanne Wake**
Geophysicist

Leanne is a geophysicist who is interested in how the sea level changes over time. Leanne researches the Greenland ice sheet. It is difficult to find the right place to take measurements so she needs to be patient but must be tenacious when things don't work. She works well in a collaborative team.

patient tenacious collaborative

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STEM PERSON OF THE WEEK | **Bethany Orme**
Surfaces Scientist

Beth's role involves developing very slippery surfaces and then measuring the movement of water droplets. She has to be imaginative and hard-working to devise new experiments to monitor the droplets motion. Beth has to be very observant as the droplet moves at a very low angle.

observed hard working imaginative

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<https://nustem.uk/stem-person-of-the-week/>

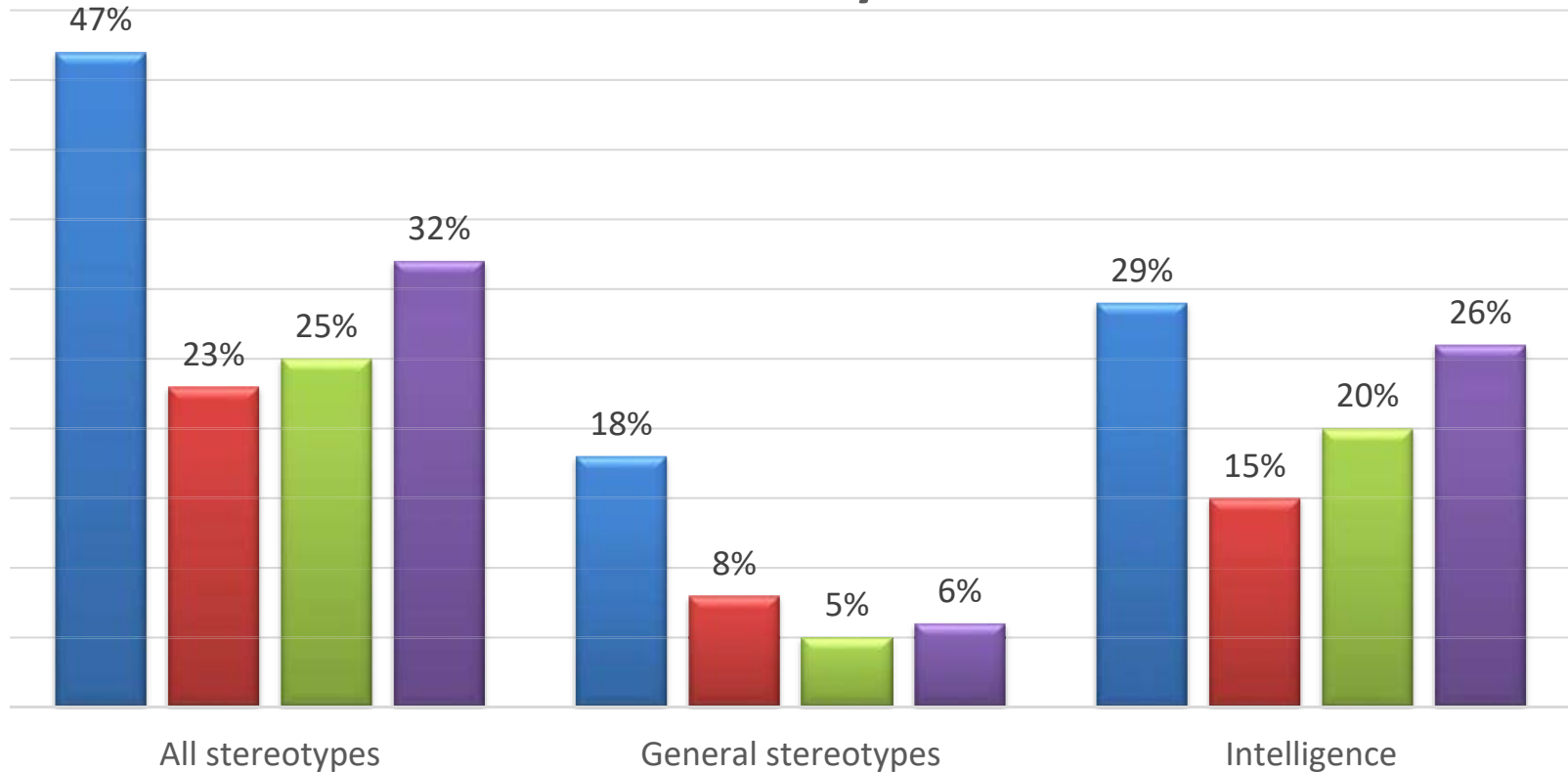
Research method

- Before the project, all children in the school were asked to write down 6 words they would use to describe a scientist.
- At the end of the project children were asked again to write down 6 words they would use to describe a scientist.
- Repeated at 1 month and 1 year after the project.

Words used were categorised and coded for:

- Stereotypes
- Intelligence
- Gender
- Positive attributes
- Negative attributes
- Target characteristics
- Positive sentiments
- Science words / attributes
- Science careers
- Miscellaneous words

STEM Person of the Week: trends in stereotype vocabulary use



■ Pre Int ■ Post (1 week) ■ Post (1 month) ■ Post (1 year)

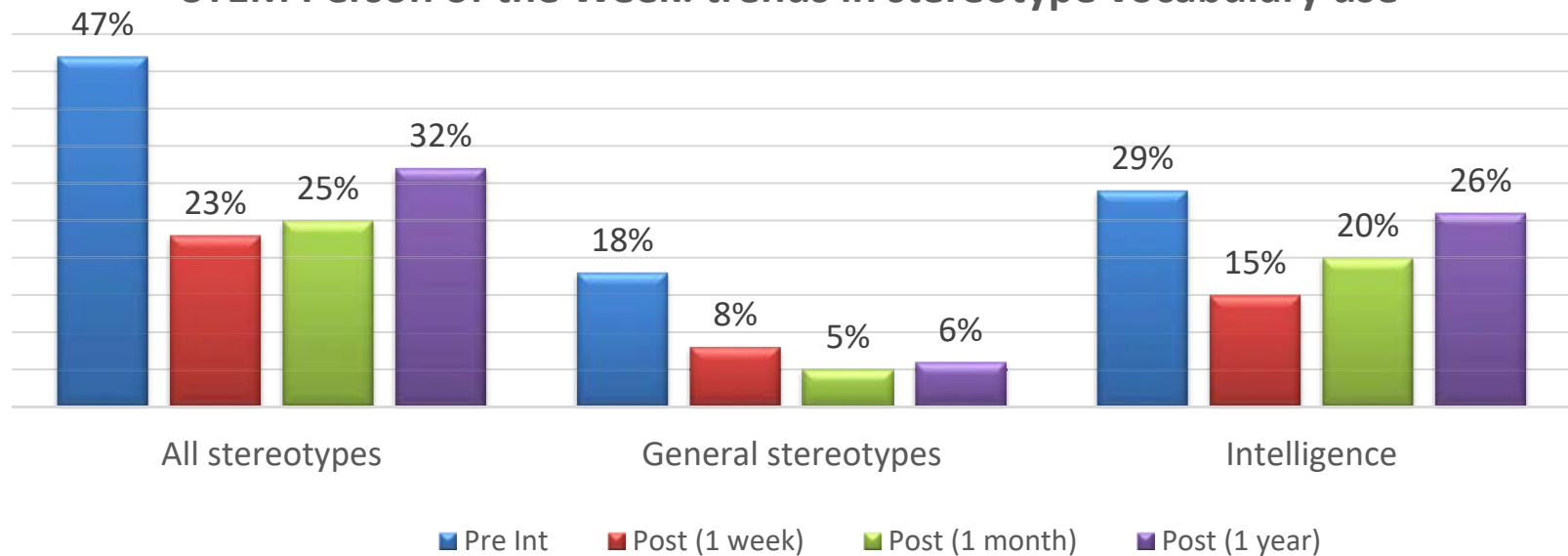
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Breakout 3 (8 minutes)

Discuss the data from the STEM Person of the Week study

STEM Person of the Week: trends in stereotype vocabulary use



Implications

- Children had a broader understanding of the characteristics that scientists had
- Reduced use of general stereotypes
- ‘Clever’ is difficult to change

The resources

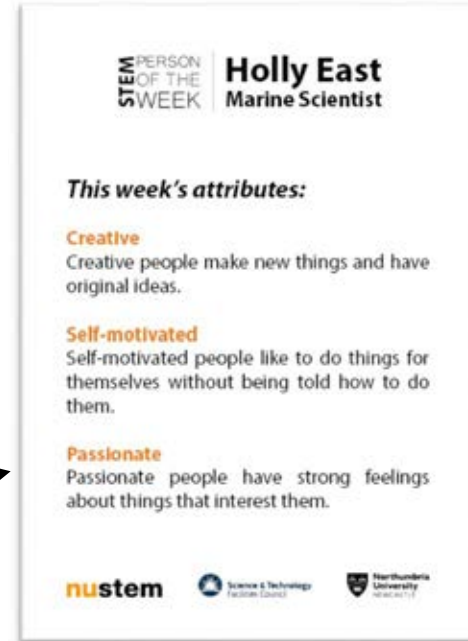
- An A3 poster to display on the classroom.
- A postcard for each of the children in your class.
- A PowerPoint presentation slide (with accompanying teacher guidance) to introduce the STEM person to your class at the start of the week.

Example materials

The poster



Front and back of the postcard



Characteristic focus



STEM PERSON OF THE WEEK **Holly East**
Marine scientist

Holly is a marine scientist who studies coral reefs. She is **passionate** about her work and enjoys the challenges of exploring coastlines. Holly is **creative** and **self-motivated** which allows her to come up with and test out new ideas about how the oceans and coastlines have changed.

Creative **Self-motivated** **Passionate**

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The resource is designed to promote a counter-stereotypical view of the STEM profession through a series of 16 attributes.

Each week, there are 3 new attributes for the children to focus on.

In science lessons, and across other subjects, praise should be focused on children who display these attributes.

We want to show children that **they already have the skills that you need to be someone who works in a STEM job.**

The 16 attributes

- Collaborative
- Committed
- Communicator
- Creative
- Curious
- Hardworking
- Imaginative
- Logical
- Observant
- Open-minded
- Organised
- Passionate
- Patient
- Resilient
- Self-motivated
- Tenacious

Breaking down stereotypes

The STEM Person of the Week role models and counter-stereotypical attributes provide a new understanding of the skills needed to be a scientist or other person who works in STEM.



STEM PERSON OF THE WEEK | **Dr Maheshwarappa**
Satellite Engineer

Mamatha designs and tests spacecraft before they go into space. She has to be **organised** and **observant** to ensure that every part of the spacecraft is ready before it is launched. Her work is challenging and she needs to be **resilient** when things are difficult.

observant **organised** **resilient**

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STEM PERSON OF THE WEEK | **Tristan Canfer**
Electronic Engineering Apprentice

Tristan's role involves building, testing and fixing electronics for the particle accelerator. He has to be **curious** in order to diagnose and fix problems with his machine. Tristan's **self-motivation** allows him to keep learning during his apprenticeship. He has to be a good **communicator** and works as part of a team.

communicator **curious** **self-motivated**

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STEM PERSON OF THE WEEK | **Mariastefania De Vido**
Laser Scientist

Mariastefania develops new kinds of high energy lasers. She has to be **open-minded** when creating and implementing new ideas. She is **passionate** about her work. The lasers she builds are used to create the same conditions found inside the core of planets. If Mariastefania finds her work difficult, she is **tenacious**, refusing to give up until she has solved a problem.

open-minded **passionate** **tenacious**

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STEM PERSON OF THE WEEK | **Sabrina Gaertner**
Instrument Scientist

Sabrina is an instrument scientist who works with particle accelerators. She is **collaborative** and has to work with different people in her team. She is a **committed** scientist responsible for operating a machine that allows her to look at the structure of liquid and glass to learn about their structure. Sabrina has to be **patient** when analysing her results.

committed **patient** **collaborative**

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STEM PERSON OF THE WEEK | **Scott Lawrie**
Physicist

Scott is in charge of the ion source at the start of a particle accelerator. He has to be **hard-working** and **meticulous** to keep the machine running and to improve it over time. Scott is **imaginative** and spends his time thinking of interesting ways to measure plasma (the pink light in the middle of the picture).

creative **imaginative** **hard-working**

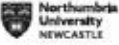
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open-minded organised resilient

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observant hard working imaginative

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<https://nustem.uk/stem-person-of-the-week/>



STEM PERSON OF THE WEEK | **Dr Alexandra Gibbs**
Materials Scientist

Alex makes new materials in her laboratory and tests them to try and understand the interesting ways they behave. She is **observant** and **logical**, looking closely at crystal structures to understand their properties. Her **resilience** helps her overcome new challenges.

Observant **Resilient** **Logical**

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STEM PERSON OF THE WEEK | **Ninad Pattalwar**
Accelerator Technician

Ninad works as a technician in a laboratory. His job involves the design, assembly and testing of parts for particle accelerators and satellites. He has to be self-motivated to ensure his machines work. Some satellites he helped make are now in space! Ninad has to be creative and open-minded to solve problems.

Creative **Self-motivated** **Open-minded**

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STEM PERSON OF THE WEEK | **Dr Kate Winter**
Polar Geologist

Kate investigates how ice flows in one of the most extreme environments in the world. She is imaginative and passionate about her work, travelling to Antarctica to use high-tech equipment to measure the movement of rocks within the ice. She needs to be tenacious when doing experiments in very cold temperatures.

Imaginative **Passionate** **Tenacious**

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STEM PERSON OF THE WEEK | **Christopher Toth**
Facility Scientist

Chris works in a research laboratory deep underground. He uses sensitive detectors to search for new particles. Chris needs to be a good communicator as he works with scientists from all over the world. The detectors can sometimes break, so he needs to be both organised and patient to fix them.

Communicator **Organised** **Patient**

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STEM PERSON OF THE WEEK | **Emma Hancock**
Software Engineering Apprentice

Emma is learning new skills in lots of different areas of computing. She writes code, builds websites and fixes computers that have stopped working. Emma is hard working and curious, which allows her to solve computing challenges successfully. She is collaborative, working in teams with others on different projects.

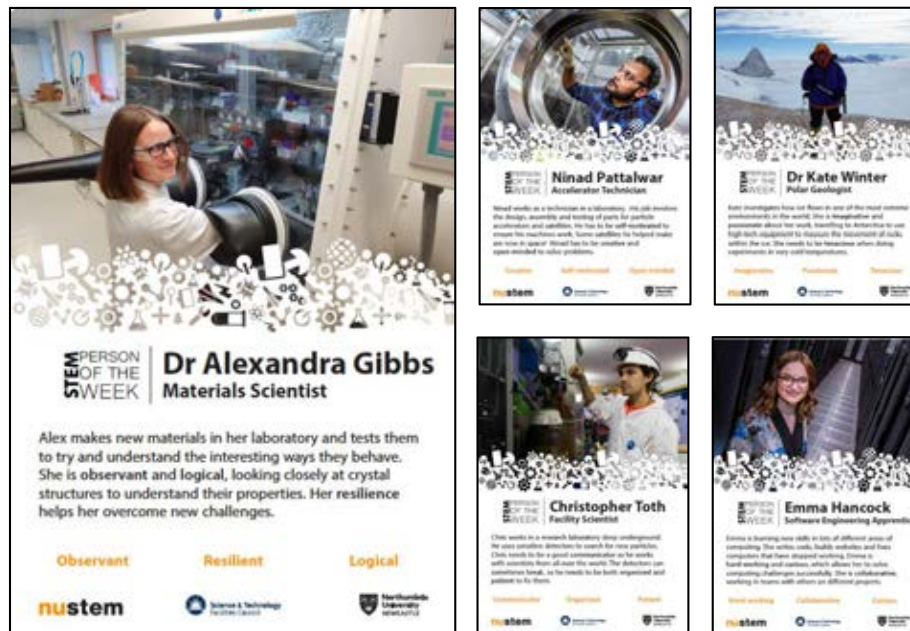
Hard-working **Collaborative** **Curious**

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<https://nustem.uk/stem-person-of-the-week/>

Breakout 4

Discuss how you could use the STEM Person of the Week resources in your school.



STEM PERSON OF THE WEEK | **Dr Alexandra Gibbs**
Materials Scientist

Alex makes new materials in her laboratory and tests them to try and understand the interesting ways they behave. She is observant and logical, looking closely at crystal structures to understand their properties. Her resilience helps her overcome new challenges.

Observant Resilient Logical

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STEM PERSON OF THE WEEK | **Ninad Pattalwar**
Accelerator Technician

Ninad works as a technician in a laboratory. His job involves the design, assembly and testing of parts for particle accelerators and detectors. He has to be self-motivated to ensure the machines work, troubleshoot the technical issues and solve any problems that arise. He needs to be creative and able to work in a team.

Creative Self-motivated Open-minded

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STEM PERSON OF THE WEEK | **Dr Kate Winter**
Polar Geologist

Kate investigates how ice flows in one of the most remote environments in the world. She is imaginative and passionate about her work, finding it interesting to see high-tech equipment in the middle of the Arctic. She needs to be hardworking when doing experiments in very cold temperatures.

Imaginative Passionate Determined

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STEM PERSON OF THE WEEK | **Christopher Toth**
Facility Scientist

Chris works in a research laboratory deep underground. He uses sensitive detectors to search for rare particles. Chris needs to be a good communicator as he works with scientists from all over the world. The detector can sometimes break, so he needs to be both organized and patient to fix them.

Communicative Organized Patient

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STEM PERSON OF THE WEEK | **Emma Hancock**
Software Engineering Apprentice

Emma is learning new skills in lots of different areas of computing. She writes code, builds websites and tests computers that have broken working. Emma is hard-working and creative, which allows her to solve computing challenges successfully. She is collaborative, working in teams with others on different projects.

Hard-working Collaborative Creative

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Next steps

Take some time to think about how you might use each of the resources in your school.

Session 1: School Analysis Tools

Session 2: The Primary Careers Tool

Session 3: STEM Person of the Week

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