



2024

GENERATION SCIENCE

EDINBURGH SCIENCE



BOOK ACTIVITIES TO SUPPORT THE CURRICULUM FOR EXCELLENCE
generationscience@scifest.co.uk

WELCOME TO THE 2024 GENERATION SCIENCE PROGRAMME

We bring unique, live experiences directly to schools across Scotland which aim to inspire pupils of all ages to engage with science, technology, engineering and maths. With fully equipped shows and workshops and expert science communicators, all experiences are linked to the Curriculum for Excellence [CfE].

This year's tour features 10 interactive shows and workshops which are available for booking all across Scotland, including our two brand new climate-focused activities *Our Changing Climate* and *The Green Machine!*

As part of educational charity Edinburgh Science, our vision for *Generation Science* is a world where the value of science and technology is recognised and celebrated, in order to achieve a brighter and more sustainable future. With over 30 years of experience delivering high quality, engaging shows and workshops, we are a leader in our field.

Get in touch to discuss your needs and book early to get the first choice of dates.

Best wishes,
The *Generation Science* Team



SPRING 5 FEBRUARY to 20 MARCH

SUMMER 22 APRIL to 28 MAY

INFORMATION NEEDED FOR BOOKING

- Title of show/workshop
- Number of performances
- Class and number of pupils
- Preferred dates (and dates that are not suitable)
- Email address (preferably a class teacher)

COST TO YOUR SCHOOL*

SHOW OR WORKSHOP – £180

MULTI-ACTIVITY DISCOUNT

[MUST BE SAME ACTIVITY ON THE SAME DAY]

£340 FOR 2 / £480 FOR 3

* We are able to offer state schools *Generation Science* activities at a subsidised rate thanks to the generous contribution of our supporters. Full price for the activities are £655 (£1200 for 2, £1400 for 3, when booking the same activity on the same day).

BOOK NOW

0131 553 0321

MONDAY TO FRIDAY 8.30AM TO 4.30PM

GENERATIONSCIENCE@SCIFEST.CO.UK

ACTIVITIES SUMMARY

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PLANET EARTH

THE SUN, MOON AND EARTH SHOW

Can your pupils help Jack and Benny discover why some children wake up just as others go to bed? The whole group will be captivated as they discover why the Sun moves across the sky and how the Sun, Moon and Earth create day and night. Join us on a trip around the world as your pupils discover the fascinating movement of our planet in this colourful and interactive show.

LEARNING OUTCOMES:

- Recall that the 'time' at any point on Earth depends where the Sun is in the sky
- Recall that at any moment, somewhere on Earth it is day and somewhere else it is night
- Describe that the Earth moves around the Sun and the Moon moves around the Earth
- Describe that the side of the Earth facing the Sun is in daytime, and the side facing away from the Sun is in night time

CFE LINKS: SPACE

Age: P1-3

Duration: 1 hour

Audience: 70 pupils

Space: Hall or gym

Cost to School: £180 per show, £340 for two, £480 for three



PLANET EARTH

THE CLIMATE CHANGE SHOW

Meet Sunbeam and Raindrop as they explore our planet's changing climates, with lots of interactive experiments and activities to discover what the future could hold – and how humans can help!

LEARNING OUTCOMES:

- Describe that climate is a pattern of weather that happens over a long period of time.
- Recall that the atmosphere is a layer of air and gases that surround the Earth.
- Identify that the ozone layer is a part of the atmosphere that helps to protect the Earth from the sun and keeps it warm.
- Describe that water (like the seas and oceans) is better at absorbing heat than air
- Identify that the primary cause of climate change is human activity
- Explain that different climates around the world are differently affected by climate change
- Identify that local actions can have a global impact and list some examples

CFE LINKS: PLANET EARTH

Age: P1–3

Duration: 1 hour

Audience: 30 pupils

Space: Hall or gym

Cost to School: £180 per show, £340 for two, £480 for three

Developed with support from
ScottishPower Foundation



PLANET EARTH + ENGINEERING

THE RENEWABLE ENERGY WORKSHOP

Design amazing machines, explore energy transfer and discover solutions for future renewable electricity sources in this dynamic journey through engineering, technology and Earth's changing climate.

LEARNING OUTCOMES:

- Recall that energy cannot be created or destroyed
- Describe that energy can be converted from one form to another
- Identify that kinetic, potential, chemical and electrical are all forms of energy
- Explain how a variety of renewable energy sources generate electricity (i.e. wind, solar, HEP, geothermal)
- Link the burning of fossil fuels and the need for renewable energy to the climate crisis
- Recall that technology is being used to explore new methods of generating renewable energy

Age: P4–7

Duration: 1 ¼ hours

Audience: 30 pupils

Space: Hall or gym

Cost to School: £180 per show, £340 for two, £480 for three

Developed with support from
ScottishPower Foundation



FORCES, ELECTRICITY AND WAVES

THE MAKE AND KEEP SOUND WORKSHOP

Join Ella's musical adventure through the wonderful world of sound. In this immersive storytelling journey, your class will explore how sound travels through the air, discover why some sounds are high and some are low and even create their own instruments to become an integral part of the show.

LEARNING OUTCOMES:

- Identify that sound is a vibration
- Repeat that an echo is produced when sound bounces off surfaces
- Recognise that different animals produce different sounds
- Express that we can use different materials to produce different sounds
- Recall that 'pitch' is the word used to describe whether a sound is high or low
- Relate that a high pitch noise is produced with fast vibrations and low pitch noise is produced with slow vibrations

CFE LINKS: VIBRATIONS AND WAVES

Age: Nurseries and P1–3

Duration: 1 hour

Audience: 30 pupils

Space: Large classroom

Cost to School: £180 per show, £340 for two, £480 for three



FORCES, ELECTRICITY AND WAVES

THE FORCES AND MOTION WORKSHOP

Forces, movement and motion are investigated by our popular teddy bear team in a series of fun and engaging activities for the whole class. Our inquisitive bears reveal the principles of gravity, friction and movement demonstrated through challenges that connect science concepts to the real world.

LEARNING OUTCOMES:

- Explain that a force is something that makes objects move
- Name pushing, pulling, gravity and friction as examples of forces
- Recall that floating and sinking are the results of forces from water and gravity
- Describe that gravity is a force pulling objects to the ground
- Describe that friction is a force between objects which can slow them down
- Recognise that making predictions is a good scientific method of experimenting

CFE LINKS: VIBRATIONS AND WAVES

Age: P1–3

Duration: 1 ¼ hours

Audience: 30 pupils

Space: Hall or gym

Cost to School: £180 per show, £340 for two, £480 for three



FORCES, ELECTRICITY AND WAVES

THE ELECTRICITY AND CIRCUITS WORKSHOP

Discover the wonders of electricity first-hand in this stimulating interactive workshop. Your pupils will explore the workings of circuits and components by using their own movement to generate green electricity and find out how it is stored. After that it's time to charge up our mini-robotic creatures for a race around the track!

LEARNING OUTCOMES:

- Recall that a circuit is a continuous loop of wire
- Recall that electricity is the flow of negative charge round a circuit
- Describe the properties of magnets
- Recognise electricity is a form of energy
- Recall that electricity can be generated by moving a magnet over the wire in a circuit
- Recognise that we can convert human movement energy into electricity
- Describe how the amount of electricity generated can be varied.

CFE LINKS: ELECTRICITY

Age: P4–7

Duration: 1 ¼ hours

Audience: 30 pupils

Space: Hall or gym

Cost to School: £180 per show, £340 for two, £480 for three



BIOLOGICAL SYSTEMS

THE BODY, BONES AND ORGANS SHOW

Discover how our bodies are put together in this fast-paced, interactive show. In the Teaching Hospital, your students will meet Dr Watson and Nurse Treat-It-Better who will take them on a journey through our bodily systems with colourful props and hands-on demonstrations. Together you'll explore common ailments, identify key areas in our bodies and learn how to stay healthy.

LEARNING OUTCOMES:

- Recall the main parts of the musculoskeletal system including bones, joints, muscles and tendons
- Name key parts of the digestive system and recall the process of digestion
- Identify key parts of the circulatory system and recall how the heart pumps blood around the body
- Describe the respiratory system, with reference to lungs, diaphragm and alveoli
- Identify the importance of a healthy lifestyle in maintaining a healthy body

CFE LINKS: BODY SYSTEMS AND CELLS

Age: P3–6

Duration: 1 hour

Audience: 70 pupils

Space: Hall or gym

Cost to School: £180 per show, £340 for two, £480 for three



MATERIALS

THE CHEMISTRY WORKSHOP

This popular experiment-filled workshop delves into chemistry and explores the scientific method. In small groups, your class will work through a range of challenges to create cool, colourful chemical reactions. Be prepared for your pupils' curiosity to be ignited.

LEARNING OUTCOMES:

- Describe that pH is an indication of how acid or alkali something is
- Define a chemical reaction as when two or more things are mixed together, they change and produce something new
- List four signs of a chemical reaction including production of heat, light, gas or colour changes
- Recall that a solid will dissolve or react faster in a solution if it is broken up into smaller pieces
- Identify steps in the scientific method: hypothesis, controls and variables (P6-7 only)

CFE LINKS: PROPERTIES AND USES OF SUBSTANCES

Age: P4–7

Duration: 1 ¼ hours

Audience: 30 pupils

Space: Large classroom

Cost to School: £180 per show, £340 for two, £480 for three



TECHNOLOGIES

GET STARTED WITH PROGRAMMING

Your class will delight in this hands-on introduction to programming which will inspire budding coders and robot fans. Using laptops and simple drag-and-drop coding, pupils will learn about robotics, coding and problem solving. After, put skills into practice and program goalkeepers using specialised LEGO® football kits to compete in the ultimate penalty shoot-out!

LEARNING OUTCOMES:

- Describe what robots are and why they are useful
- Identify that a computer program is a set of instructions
- Recognise that the order of instructions is very important
- Create basic computer programs for robots to perform simple tasks
- Recall that a robot will only do what it is programmed to do

CFE LINKS: COMPUTING SCIENCE

Age: P1–3

Duration: 1 hour

Audience: 30 pupils

Space: Large classroom

Cost to School: £180 per show, £340 for two, £480 for three



TECHNOLOGIES

PROGRAM A DANCING ROBOT

Get your class programming together to complete challenges and create a robot disco in this hands-on interactive workshop. Students will use the programming language Scratch to program Marty the Robot™ to follow commands and navigate its way around our obstacle course. As they explore programming students will develop their logic and problem-solving skills all with a little help from our humanoid robots.

LEARNING OUTCOMES:

- Describe what robots are and why they are useful
- Create basic computer programs for robots to perform simple tasks
- Troubleshoot basic computer programs to identify why a robot is not performing as expected
- Recall how different sensors can be used to control a robot's movement
- Explain the concept of a 'loop' when referring to a computer program
- Explain the concept of 'if-then' statements when referring to a computer program

CFE LINKS: COMPUTING SCIENCE

Age: P4–7

Duration: 1 ¼ hours

Audience: 30 pupils

Space: Large classroom

Cost to School: £180 per show, £340 for two, £480 for three

WITH SPECIAL THANKS TO ALL OUR SUPPORTERS

As a registered charity we simply couldn't deliver *Generation Science* without the support of our valued partners. If you would like to support our work please visit our website or contact our Development team on development@scifest.co.uk.

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our Catalysts and those who prefer to remain anonymous

New 2024 workshops *Our Changing Climate* and *The Green Machine*
developed thanks to support from ScottishPower Foundation