Links to curriculum topics

The Brian Cox school experiments are a set of free resources designed around new and emerging technologies within the STEM curriculum.
The videos and accompanying worksheets aim to assist teachers in delivering practical science and engaging 11 – 14 year old students with these developing areas.

This document highlights the links to the national curriculums for each of the topics. You can find further information about the topic areas referenced on each of the individual curriculums online.

Do the washing conditions affect the amount of plastic microfibres shed from fleece?

In this experiment students are investigating the effect of washing conditions on fleece materials and how this may impact our water systems.

England

- Scientific attitudes
- Experimental skills and investigations
- Analysis and evaluation
- Biology
- Interactions and interdependencies
- Relationships in an ecosystem.

Scotland

- Materials
- Properties and uses of substances
- Technological developments in society and business.

Wales

- Being curious and searching for answers is essential to understanding and predicting phenomena.
- The world around us is full of living things which depend on each other for survival.
- Matter and the way it behaves defines our universe and shapes our lives.

Northern Ireland

- Develop skills in scientific methods of enquiry.
- Develop creative and critical thinking in their approach to solving scientific problems.
- Develop a range of practical skills, including the safe use of science equipment.
- Organisms and health: interdependence of plants and animals.
- Chemical and material behaviour: structures, properties, uses of materials, elements, compounds and mixtures.
- Earth and Universe: the environment and human influences.

Links to resources

Guidance notes and worksheet | Classroom video

Do sun and shade plants have different rates of photosynthesis?

The purpose of this experiment is to show that some plants have naturally evolved traits to enable them to photosynthesise more efficiently in the shade.

England

- Scientific attitudes
- Experimental skills and investigations
- Analysis and evaluation
- Measurement
- Biology
- Material cycles and energy
- Photosynthesis
- Cells and organisation.

Scotland

- Planet Earth
- Biodiversity and interdependence
- Biological systems.

Wales

- Being curious and searching for answers is essential to understanding and predicting phenomena.
- The world around us is full of living things which depend on each other for survival.
- Matter and the way it behaves defines our universe and shapes our lives.
- Forces and energy provide a foundation for understanding our universe.

Northern Ireland

- Develop skills in scientific methods of enquiry to further scientific knowledge and understanding.
- Develop a range of practical skills, including the safe use of science equipment.
- Organisms and health: interdependence of plants and animals.
- Chemical and material behaviour: atoms and chemical changes.
- Forces and energy: forces and energy transfer, sound and light.
- Earth and Universe: the environment and human influences.

Links to resources

Guidance notes and worksheet | Classroom video

Can we build and test a model of a robotic arm and an effector? (Mission X)

In this lesson students will construct a robot arm out of ice lolly sticks and use it to try and pick up a ping-pong ball.

England

- Scientific attitudes
- Experimental skills and investigations
- Physics
- Motion and forces.

Scotland

- Forces
- Forces, electricity and waves
- Craft, design, engineering and graphics
- Application of engineering
- Design and construct models / products.

Wales

- Being curious and searching for answers is essential to understanding and predicting phenomena.
- Design thinking and engineering offer technical and creative ways to meet societies needs and wants.
- Matter and the way it behaves defines our universe and shapes our lives.
- Forces and energy provide a foundation for understanding our universe.

Northern Ireland

- Develop creative and critical thinking in their approach to solving scientific problems.
- Chemical and material behaviour: structures, properties, uses of materials.
- Forces and energy: forces and energy transfer.

Links to resources

Guidance notes and worksheet | Classroom video

What is the effect of data size on a sorting activity?

In this lesson students will develop their own algorithms for sorting objects and also look at the effect that increasing the size of the data set has.

England

- Scientific attitudes
- Experimental skills and investigations (From Teach Computing)
- Algorithms
- Data and information.

Scotland

- Computing science
- Understanding the world through computational thinking.

Wales

- Being curious and searching for answers is essential to understanding and predicting phenomena.
- Computation is the foundation for our digital world.

Northern Ireland

- Develop skills in scientific methods of enquiry to further scientific knowledge and understanding.
- Develop creative and critical thinking in their approach to solving scientific problems.
- Computing: computational thinking (decomposition, pattern recognition, abstraction, pattern generalization, algorithm design).

Links to resources

Guidance notes and worksheet | Classroom video

What is the best design of a wind turbine for lifting a cup?

In this experiment students will work in groups to design a model of a wind turbine that can lift masses off the floor using the power of a hairdryer.

England

- Scientific attitudes
- Experimental skills and investigations
- Analysis and evaluation
- Physics
- Energy changes and transfers
- Changes in systems
- Forces and motion.

Scotland

- Energy sources and sustainability
- Planet Earth
- Processes of the Planet
- Forces
- Forces, electricity and waves
- Craft, design, engineering and graphics
- Application of engineering
- Design and construct models / products
- Technological developments in society and business.

Wales

- Being curious and searching for answers is essential to understanding and predicting phenomena.
- Design thinking and engineering offer technical and creative ways to meet societies needs and wants.
- Matter and the way it behaves defines our universe and shapes our lives.
- Forces and energy provide a foundation for understanding our universe.

Northern Ireland

- Develop skills in scientific methods of enquiry to further scientific knowledge and understanding.
- Develop creative and critical thinking in their approach to solving scientific problems.
- Develop a range of practical skills, including the safe use of science equipment.
- Forces and energy: forces and energy transfer; using electricity.
- Earth and Universe: the environment and human influences.

Links to resources

Guidance notes and worksheet | Classroom video

Does CO_2 affect the pH of seawater and how does acidity affect the strength of seashells?

In this practical, students are investigating the effect of carbon dioxide (CO_2) on the ocean.

England

- Scientific attitudes
- Experimental skills and investigations
- Analysis and evaluation
- Biology
- Interactions and interdependencies
- Relationships in an ecosystem
- Inheritance, chromosomes, DNA and genes
- Chemistry
- Chemical reactions
- Earth and atmosphere.

Scotland

- Planet Earth
- Processes and the Planet
- Materials
- Chemical Changes
- Technological developments in society and business.

Wales

- Being curious and searching for answers is essential to understanding and predicting phenomena.
- The world around us is full of living things which depend on each other for survival.
- Matter and the way it behaves defines our universe and shapes our lives.

Northern Ireland

- Develop skills in scientific methods of enquiry to further scientific knowledge and understanding.
- Develop a range of practical skills, including the safe use of science equipment.
- Organisms and health: interdependence of plants and animals.
- Chemical and material behaviour: structures, properties, uses of materials; elements, compounds and mixtures; atoms and chemical changes.
- Earth and Universe: the environment and human influences.

Links to resources

Guidance notes and worksheet | Classroom video

For the full set of resources and more school experiments, visit **royalsociety.org/schoolexperiments**