Science Clips
5-14 Science Curriculum links

The three series of Science Clips (Ages 5-7, Ages 7-9 and Ages 9-11) provide a wealth of material which can be utilised to help deliver specific attainment targets in the 5-14 Science Curriculum for Scotland. An overview of the links between the Science Clips and specific attainment targets in the 5-14 Science Curriculum are summarised below. For each clip, teaching points and follow-up activities are specifically designed to fulfil the requirements of the Scottish Science Curriculum. Additional material, not directly linked to the Scottish curriculum, provides valuable extension material. Links to the 5-14 Health Education Curriculum have been highlighted. Please note, guidelines specified in the *Be Safe* booklet should be adhered to when carrying out investigations

Knowledge and Understanding: Earth and space
Strand: Earth in space

Level	Attainment targets	Science clips		
		Ages 5-7	**Ages 7-9**	**Ages 9-11**
A	• Identify the Sun, the Moon and the stars.			
	• Link the pattern of day and night to the position of the Sun.		• Light and shadow	
B	• Associate the seasons with differences in observed temperature			
	• Describe how day and night are related to the spin of the Earth.		• Light and shadow	
C	• Describe the solar system in terms of the Earth, Sun and planets.			
	• Link the temperature of the planets to their relative positions and atmospheres.			
D	• Relate the movement of the planets around the Sun to gravitational forces.			
	• Give some examples of the approaches taken to space exploration.			• Forces in action
E	• Explain day, month and year in terms of the relative motion of the Sun, the Earth and the Moon.			• Earth, Sun and Moon
	• Describe the Universe in terms of stars, galaxies and black holes.			

Knowledge and Understanding: Earth and space
Strand: Materials from Earth

Level	Attainment targets	Science clips		
		Ages 5-7	**Ages 7-9**	**Ages 9-11**
A	• Recognise and name some common materials from living and non-living sources.	• Sorting and using materials • Grouping and changing materials	• Characteristics of materials	
	• Give examples of uses of some materials based on simple properties.	• Sorting and using materials • Grouping and changing materials	• Characteristics of materials	
	• Give the main uses of water			
B	• Make observations of differences in the properties of common materials.	• Sorting and using materials • Grouping and changing materials	• Characteristics of materials • Rocks and soils	
	• Relate uses of everyday materials to properties.	• Sorting and using materials • Grouping and changing materials	• Characteristics of materials • Keeping warm • Rocks and soils	
	• Explain why water conservation is important.			
C	• Describe differences between solids, liquids and gases.		• Solids and liquids	• Gases around us • Changing state
	• Give some everyday uses of solids, liquids and gases.		• Solids and liquids	• Gases around us
D	• Describe the internal structure of the Earth.			
	• Describe the processes that led to the formation of the three main types of rock.			
	• Give examples of useful materials that we obtain from the Earth's crust.		• Rocks and soils	
	• Describe how soils are formed.		• Rocks and soils	
	• Name the gases of the atmosphere and describe some of their uses.			• Gases around us
E	• Describe the particulate nature of solids, liquids and gases and use this to explain their known properties.			
	• Describe what is meant by an element.			
	• Describe how physical properties of elements are used to classify them as metals or non-metals.			

Knowledge and Understanding: Earth and space
Strand: Changing materials

Level	Attainment targets	Science clips		
		Ages 5-7	**Ages 7-9**	**Ages 9-11**
A	• Make observations of the ways in which some materials can be changed by processes such as squashing, bending, twisting and stretching.	• Grouping and changing materials		
B	• Describe how everyday materials can be changed by heating or cooling.	• Grouping and changing materials	• Keeping warm • Solids and liquids	
	• Give examples of everyday materials that dissolve in water.			• Reversible and irreversible changes
	• Give examples of common causes of water pollution.			
C	• Describe changes when materials are mixed.			• Reversible and irreversible changes
	• Describe how solids of different sizes can be separated.		• Solids and liquids	• Reversible and irreversible changes
	• Distinguish between soluble and insoluble materials.			• Reversible and irreversible changes
	• Describe in simple terms the changes that occur when water is heated or cooled.		• Solids and liquids	• Changing state
D	• Describe what happens when materials are burned.			
	• Explain how evaporation and filtration can be used in the separation of solids from liquids.			• Changing state • Reversible and irreversible changes
	• Describe the effects of burning fossil fuels.			
E	• Give examples of simple chemical reactions, explaining them in terms of elements and compounds.			
	• Describe the effect of temperature on solubility.			
	• Describe the use of pH to measure acidity.			
	• Describe the process of neutralisation and give some everyday applications.			
	• Describe what happens when metals react with oxygen, water and acids.			
	• Describe how metal elements can be extracted from compounds in the Earth's crust.			

Knowledge and Understanding: Energy and forces
Strand: Properties and uses of energy

Level	Attainment targets	Science clips		
		Ages 5-7	Ages 7-9	Ages 9-11
A	• Give examples of sources of heat, light and sound.	• Light and dark		
	• Give examples of everyday uses of heat, light and sound.	• Light and dark		
	• Give examples of everyday appliances that use electricity.	• Using electricity	• Circuits and conductors	
	• Identify some of the common dangers associated with use of electricity.	• Using electricity	• Circuits and conductors	
B	• Identify the sun as the main source of heat and light.	• Light and dark		
	• Link light and sound to seeing and hearing.	• Light and dark • Sound and hearing		
C	• Link light to shadow formation.		• Light and shadow	
	• Give examples of light being reflected from surfaces.			• How we see things
	• Link sound to sources of vibration.	• Sound and hearing		• Changing sounds
	• Construct simple battery-operated circuits, identifying the main components.		• Circuits and conductors	
	• Classify materials as electrical conductors or insulators and describe how these are related to the safe use of electricity.		• Circuits and conductors	
D	• Distinguish between heat and temperature.		• Keeping warm	
	• Describe in simple terms how lenses work.			
	• Give examples of simple applications of lenses.			
	• Use the terms ‘pitch’ and ‘volume’ to describe sound.			• Changing sounds
	• Construct a series circuit following diagrams using conventional symbols.			• Changing circuits
	• Describe the effect of changing the number of components in a series circuit.			• Changing circuits
E	• Describe the differences between the flow of heat by conduction and convection.			
	• Give examples of everyday uses of good and poor conductors of heat.			
	• Explain the effect of a prism on white light.			
	• Describe what happens when light passes through different materials.			
	• Explain what happens when sound passes through different materials.			
	• Construct a parallel circuit following diagrams.			• Changing circuits
	• Use the terms ‘voltage’, ‘current’ and ‘resistance in the context of simple circuits.			

Knowledge and Understanding: Energy and forces
Strand: Conversion and transfer of energy

Level	Attainment targets	Science clips		
		Ages 5-7	**Ages 7-9**	**Ages 9-11**
B	• Give examples of being 'energetic'.		• Teeth and eating • Moving and growing	
	• Link the intake of food to the movement of their body.		• Teeth and eating • Moving and growing	
C	• Give examples of energy being converted from one form to another.			
	• Describe the energy conversions in the components of an electrical circuit.		• Circuits and conductors	
D	• Give some examples of energy conversions involved in the generation of electricity.			
	• Describe how electrical energy is distributed to our homes.	• Using electricity		
	• Name some energy resources.			
E	• Describe some examples of the inter-conversion of potential and kinetic energy.			
	• Give some examples of chemical energy changes.			
	• Explain the difference between renewable and non-renewable energy resources.			

Knowledge and Understanding: Energy and forces
Strand: Forces and their effects

Level	Attainment targets	Science clips		
		Ages 5-7	**Ages 7-9**	**Ages 9-11**
A	• Give examples of pushing and pulling, floating and sinking.	• Pushes and pulls		
B	• Describe the effect that a push and pull can have on the direction, speed or shape of an object.	• Forces and movement	• Magnets and springs	
	• Give examples of magnets in everyday use.		• Magnets and springs	
	• Describe the interaction of magnets in terms of the forces of attraction and repulsion.		• Magnets and springs	
C	• Give some examples of friction		• Friction	
	• Explain friction in simple terms.		• Friction	
	• Describe air resistance in terms of friction.		• Friction	
D	• Give examples of streamlining and explain how this lowers resistance.		• Friction	
	• Describe the relationship between the Earth's gravity and the weight of an object.			• Forces in action
E	• Describe effects of balanced and unbalanced forces.			
	• Explain how gravity on other planets and the Moon affects the weight of an object.			• Forces in action

Knowledge and Understanding: Living things and the processes of life
Strand: Variety and characteristic features

Level	Attainment targets	Science clips		
		Ages 5-7	**Ages 7-9**	**Ages 9-11**
A	• Recognise similarities and differences between themselves and others.	• Ourselves		
	• Sort living things into broad groups according to easily observable characteristics.	• Ourselves • Growing plants • Variation		
B	• Give some of the more obvious distinguishing features of the major invertebrate groups.			
	• Name some common members of the invertebrate groups.	• Plants and animals in the local environment		
C	• Give some of the more obvious distinguishing features of the five vertebrate groups.		• Moving and growing	
	• Name some common members of the vertebrate groups.		• Moving and growing	
	• Name some common animals and plants using simple keys.			
D	• Give the main distinguishing features of the major groups of flowering and non-flowering plants.			
E	• Give the main distinguishing features of micro organisms.			• Micro organisms
	• Create and use keys to identify living things.			
	• Give examples of inherited and environmental causes of variation.			

Knowledge and Understanding: Living things and the processes of life
Strand: The processes of life

Level	Attainment targets	Science clips		
		Ages 5-7	**Ages 7-9**	**Ages 9-11**
A	• Name and identify the main external parts of the bodies of humans and other animals.	• Ourselves		
	• Describe some ways in which humans keep themselves safe.	• Ourselves		
	• Give the conditions needed by animals and plants in order to remain healthy.	• Health and growth	• Helping plants grow well	
B	• Give examples of how the senses are used to detect information.	• Ourselves		
	• Recognise the stages of the human life cycle.	• Ourselves		
	• Recognise stages in the life cycles of familiar plants and animals.	• Health and growth • Growing plants	• Helping plants grow well	
	• Identify the main parts of flowering plants.	• Growing plants	• Helping plants grow well	
C	• Name the life processes common to humans and other animals.		• Teeth and eating • Moving and growing	
	• Identify the main organs of the human body.			• Keeping healthy
	• Describe the broad functions of the organs of the human body.			
	• Describe the broad functions of the main parts of flowering plants.		• Helping plants grow well	
D	• Describe the role of lungs in breathing.			• Keeping healthy
	• Outline the process of digestion.		• Teeth and eating	
	• Describe the main changes that occur during puberty.			
	• Describe the main stages in human reproduction.			• Life cycles
	• Describe the main stages in flowering-plant reproduction.			• Life cycles
E	• Identify and give the functions of the main structures found in plant and animal cells.			
	• Identify, name and give the functions of the main organs of the human reproductive system.			
	• Identify the raw materials, conditions and the products of photosynthesis.			

Knowledge and Understanding: Living things and the processes of life
Strand: Interaction of living things with their environment

Level	Attainment targets	Science clips		
		Ages 5-7	**Ages 7-9**	**Ages 9-11**
A	• Recognise and name some common plants and animals found in the local environment.	• Plants and animals in the local environment • Variation		
	• Give examples of how to care for living things and the environment.			
	• Give some examples of seasonal changes in the appearance of plants.			
B	• Give examples of feeding relationships found in the local environment.	• Plants and animals in the local environment	• Teeth and eating • Habitats	
	• Construct simple food chains.		• Habitats	
C	• Give examples of living things that are rare or extinct.			
	• Explain how living things and the environment can be protected and give examples.		• Habitats	
D	• Describe examples of human impact on the environment that have brought about beneficial changes, and examples that have detrimental effects.			
	• Give examples of how plants and animals are suited to their environment.		• Habitats	• Interdependence and adaptation
	• Explain how responses to changes in the environment might increase the chances of survival.			• Interdependence and adaptation
E	• Construct and interpret simple food webs and make predictions of the consequences of change.			
	• Describe examples of competition between plants and between animals.			
	• Give examples of physical factors that affect the distribution of living things.			