



THE BATT C.E. SCHOOL

**‘Love the Adventure of Learning’
The Batt C.E. School**

Science



Science Knowledge Coverage

Year	Autumn	Spring	Summer		
R	<p>Children are encouraged to explore the world around them through a variety of activities and themes based upon the seasons. They will learn to make observations and ask scientific questions, and become familiar with using tools and equipment to help with their enquiries.</p>				
	<p>Spiders Conkers Leaves Pumpkins</p>	<p>Sticks Fire Apples Mud</p>	<p>Moon Stars Ice Rain</p>	<p>Nests Buds Worms Baby animals</p>	<p>Seeds Tadpoles Butterflies Beans</p>
1	<p>Chemistry: Everyday materials Properties of materials Grouping materials</p> <ul style="list-style-type: none"> Know the name of the materials an object is made from Know about the properties of everyday materials <p>Can they describe materials using their senses? Can they describe materials using their senses, using specific scientific words?</p>	<p>Biology: Animals including humans Human body and senses</p> <ul style="list-style-type: none"> Know the name of parts of the human body that can be seen <p>Can they name the parts of the human body that they can see? Can they identify the main parts of the human body and link them to their senses?</p> <p>Name common animals Carnivores, etc</p>	<p>Biology: Plants Common plants Plant structure</p> <ul style="list-style-type: none"> Know and name a variety of common wild and garden plants Know and name the petals, stem, leaves and root of a plant Know and name the roots, trunk, branches and leaves of a tree <p>Can they name the petals, stem, leaf and root of a plant?</p>		

	<p>Can they explain what material objects are made from? Can they explain why a material might be useful for a specific job? Can they name some different materials? Can they sort materials into groups by a given criteria? Can they explain how solid shapes can be changed by squashing, bending, twisting and stretching?</p> <p>Physics: Seasonal change <i>The four seasons</i> <i>Seasonal weather</i></p> <ul style="list-style-type: none"> Name the seasons and know about the type of weather in each season 	<ul style="list-style-type: none"> Know how to classify a range of animals by amphibian, reptile, mammal, fish and birds Know and classify animals by what they eat (carnivore, herbivore and omnivore) Know how to sort by living and non living things <p>Can they name the parts of an animal's body? Can they name a range of domestic animals? Can they classify animals by what they eat? (carnivore, herbivore, omnivore) Can they compare the bodies of different animals? Can they point out some of the differences between different animals? Can they sort photographs of living things and non-living things? Can they classify common animals? (birds, fish, amphibians, reptiles, mammals, invertebrates) Can they describe how an animal is suited to its environment?</p>	<p>Can they identify and name a range of common plants and trees? Can they recognise deciduous and evergreen trees? Can they describe the parts of a plant (roots, stem, leaves, flowers)?</p>
2	<p>Chemistry: Everyday materials <i>Identify different materials</i> <i>Name everyday materials</i> <i>Properties of materials</i> <i>Compare the use of different materials</i> <i>Compare movement on different surfaces</i></p> <ul style="list-style-type: none"> Know how materials can be changed by squashing, bending, twisting and stretching 	<p>Biology: Plants <i>Plant and seed growth</i> <i>Plant reproduction</i> <i>Keeping plants healthy</i></p> <ul style="list-style-type: none"> Know and explain how seeds and bulbs grow into plants Know what plants need in order to grow and stay healthy (water, light & suitable temperature) 	<p>Biology: Animals including humans <i>Animal reproduction</i> <i>Healthy living</i> <i>Basic needs</i></p> <ul style="list-style-type: none"> Know the basic stages in a life cycle for animals, (including humans) Know why exercise, a balanced diet and good hygiene are important for humans <p>Can they describe what animals need to survive?</p>

- Know why a material might or might not be used for a specific job

Can they distinguish between an object and the material from which it is made?

Can they identify and name a range of everyday materials? (wood, plastic, metal, water, rock)

Can they describe the simple physical properties of a variety of everyday materials?

Can they compare and classify a variety of materials based on their simple physical properties?

Can they explore how the shapes of solid objects can be changed? (squashing, bending, twisting, stretching)

Can they find out about people who developed useful new materials? (Dunlop, MacKintosh, MacAdam)

Can they identify and compare the uses of a range of everyday materials? (wood, metal, plastic, glass, brick/rock, paper/cardboard)

Can they explain how things move on different surfaces?

Can they describe what plants need to survive?

Can they describe how seeds and bulbs grow into plants?

Can they describe what a plant needs to grow and stay healthy?

Can they explain that plants grow and reproduce?

Can they explain that animals grow and reproduce?

Can they explain why animals have offspring?

Can they describe the life cycle of some living things? (e.g. egg, chick, chicken)

Can they explain the basic needs of animals, including humans?

Can they describe why exercise and a balanced diet are important for humans?

All things and their habitats

Alive or dead

Habitats

Adaptations

Food chains

- Classify things by living, dead or never lived
- Know how a specific habitat provides for the basic needs of things living there (plants and animals)
- Match living things to their habitat
- Name some different sources of food for animals
- Know about and explain a simple food chain

Can they match certain living things to the habitats they are found in?

Can they explain the differences between living and non-living things?

Can they describe some of the life processes common to plants and animals, including humans?

Can they decide whether something is living, dead or non-living?

Can they describe how a habitat provides for the basic needs of things living there?

			<p>Can they describe a range of different habitats?</p> <p>Can they describe how plants and animals are suited to their habitat?</p>
3	<p>Biology: Animals, including humans Skeleton and muscles Nutrition Exercise and health</p> <ul style="list-style-type: none"> • Know about the importance of a nutritious, balanced diet • Know how nutrients, water and oxygen are transported within animals and humans • Know about the skeletal and muscular system of a human <p>Physics: Forces Different Forces Magnets</p> <ul style="list-style-type: none"> • Know about and describe how objects move on different surfaces • Know how a simple pulley works and use to on to lift an object • Know how some forces require contact and some do not, giving examples • Know about and explain how magnets attract and repel Predict whether magnets will attract or repel and give a reason 	<p>Chemistry: Rocks Fossil formation Compare and group rocks Soil</p> <ul style="list-style-type: none"> • Compare and group rocks based on their appearance and physical properties, giving reasons • Know how soil is made and how fossils are formed • Know about and explain the difference between sedimentary, metamorphic and igneous rock. <p>Use research to find out what the main differences are between sedimentary and igneous rocks.</p> <p>Ask questions such as: Where does a fossil come from? How are fossils formed? How are fossils different to each other?</p>	<p>Physics: Light Reflections Shadows</p> <ul style="list-style-type: none"> • Know that dark is the absence of light • Know that light is needed in order to see and is reflected from a surface • Know and demonstrate how a shadow is formed and explain how a shadow changes shape • Know about the danger of direct sunlight and describe how to keep protected <p>Ask questions such as: Why does the moon appear as different shapes in the night sky? Why do shadows change during the day?</p> <p>Observe at what time of day a shadow is likely to be at its longest and shortest.</p> <p>Biology: Plants Life cycle Water transportation Plant life Basic structure and functions</p> <ul style="list-style-type: none"> • Know how water is transported within plants

			<ul style="list-style-type: none"> • Know the plant life cycle, especially the importance of flowers • Know the function of different parts of flowering plants and trees <p>Observe which type of plants grow in different places e.g. bluebells in woodland, roses in domestic gardens, etc. Test to see which type of soil is most suitable when growing two similar plants. Set up a fair test with different variables e.g. the best conditions for a plant to grow.</p>
4	<p>Physics: Sound</p> <p><i>How sounds are made</i> Sound vibrations Pitch and Volume</p> <ul style="list-style-type: none"> • Know how sound is made, associating some of them with vibrating • Know how sound travels from a source to our ears • Know the correlation between pitch and the object producing a sound • Know the correlation between the volume of a sound and the strength of the vibrations that produced it • Know what happens to a sound as it travels away from its source <p>Chemistry: States of Matter <i>Compare and group materials</i> Solids, liquids and gases Changing state Water cycle</p>	<p>Physics: Electricity</p> <p><i>Uses of electricity</i> Simple circuits and switches Conductors and insulators</p> <ul style="list-style-type: none"> • Identify and name appliances that require electricity to function • Construct a series circuit • Identify and name the components in a series circuit (including cells, wires, bulbs, switches and buzzers) • Predict and test whether a lamp will light within a circuit • Know the function of a switch • Know the difference between a conductor and an insulator; giving examples of each 	<p>Biology: Animals, including humans Digestive system Teeth Food chains</p> <ul style="list-style-type: none"> • identify and name the parts of the human digestive system • Know the functions of the organs in the human digestive system • Identify and know the different types of human teeth • Know the functions of different human teeth • Use and construct food chains to identify producers, predators and prey <p>Biology: All living things in their habitats Grouping living things Classification keys Adaptation of living things</p>

	<ul style="list-style-type: none"> • Know the temperature at which materials change state • Know about and explore how some materials can change state • Know the part played by evaporation and condensation in the water cycle 		<ul style="list-style-type: none"> • Use classification keys to group, identify and name living things • Know how changes to an environment could endanger living things
5	<p>Physics: Forces Gravity Friction Forces and motion of mechanical devices</p> <ul style="list-style-type: none"> • Know what gravity is and its impact on our lives • Identify and know the effect of air and water resistance • Identify and know the effect of friction • Explain how levers, pulleys and gears allow a smaller force to have a greater effect <p>Earth, moon and Space Movement of the Earth and the planets Movement of the Moon Night and day</p> <ul style="list-style-type: none"> • Know about and explain the movement of the Earth and other planets relative to the Sun • Know about and explain the movement of the Moon relative to the Earth • Know and demonstrate how night and day are created • Describe the Sun, Earth and Moon (using the term spherical) 	<p>Chemistry: Properties and changes in materials Compare properties of everyday materials Soluble/ dissolving Reversible and irreversible substances</p> <ul style="list-style-type: none"> • Compare and group materials based on their properties (e.g. hardness, solubility, transparency, conductivity, [electrical & thermal], and response to magnets • Know and explain how a material dissolves to form a solution • Know and show how to recover a substance from a solution • Know and demonstrate how some materials can be separated (e.g. through filtering, sieving and evaporating) • Know and demonstrate that some changes are reversible and some are not • Know how some changes result in the formation of a new material and that this is usually irreversible 	<p>Biology: All living things and their habitats Life cycles – plants and animals Reproductive processes Famous naturalists</p> <ul style="list-style-type: none"> • Know the life cycle of different living things e.g. mammal, amphibian, insect and bird • Know the differences between different life cycles • Know the process of reproduction in plants • Know the process of reproduction in animals <p>Animals including humans Changes as humans develop from birth to old age</p> <ul style="list-style-type: none"> • Create a timeline to indicate stages of growth in humans
6	<p>Physics: Light</p>	<p>Biology: All living things and their habitats</p>	<p>Biology: Animals including humans</p>

How light travels

Reflection

Ray models of light

- Know how light travels
- Know and demonstrate how we see objects
- Know why shadows have the same shape as the object that casts them
- Know how simple optical instruments work e.g. periscope, telescope, binoculars, mirror, magnifying glass etc.

Electricity

Electrical components

Simple circuits

Fuses and voltage

- Compare and give reasons for why components work and do not work in a circuit
- Draw circuit diagrams using correct symbols
- Know how the number and voltage of cells in a circuit links to the brightness of a lamp or the volume of a buzzer

Classification of living things and the reasons for it

- Classify living things into broad groups according to observable characteristics and based on similarities and differences
- Know how living things have been classified
- Give reasons for classifying plants and animals in a specific way

Evolution and inheritance

Identical and non-identical off-spring

Fossil evidence and evolution

Adaptation and evolution

- Know how the Earth and living things have changed over time
- Know how fossils can be used to find out about the past
- Know about reproduction and offspring (recognising that offspring normally vary and are not identical to their parents)
- Know how animals and plants are adapted to suit their environment
- Link adaptation over time to evolution
- Know about evolution and can explain what it is

The circulatory system

Water transportation

Impact of exercise on body

- Identify and name the main parts of the human circulatory system
- Know the function of the heart, blood vessels and blood
- Know the impact of diet, exercise, drugs and lifestyle on health
- Know the ways in which nutrients and water are transported in animals, including humans

**Knowledge, Skills and Understanding breakdown for
Working Scientifically
Progression**

Aspect	Year 1	Year 2	Aspect	Year 3	Year 4	Year 5	Year 6
Observing closely	<p>Can they talk about what they see, touch, smell, hear or taste?</p> <p>Can they use simple equipment to help them make observations?</p>	<p>Can they use see, touch, smell, hear or taste to help them answer questions?</p> <p>Can they use some science words to describe what they have seen and measured?</p> <p>Can they compare several things?</p>	Planning	<p>Can they use different ideas and suggest how to find something out?</p> <p>Can they make and record a prediction before testing?</p> <p>Can they plan a fair test and explain why it was fair?</p> <p>Can they set up a simple fair test to make comparisons?</p> <p>Can they explain why they need to collect information to answer a question?</p>	<p>Can they set up a simple fair test to make comparisons?</p> <p>Can they plan a fair test and isolate variables and explain why it was fair and explain which variables have been isolated?</p> <p>Can they suggest improvements and predictions?</p> <p>Can they decide which information needs to be collected and decide which is the best way for collecting it?</p> <p>Can they use their findings to draw a simple conclusion?</p>	<p>Can they plan and carry out an investigation by controlling variables fairly and accurately?</p> <p>Can they make a prediction with reasons?</p> <p>Can they use test results to make further predictions and set up further comparative tests?</p> <p>Can they present a report of their findings through writing, display and presentation?</p>	<p>Can they explore different ways to test an idea and choose the best way, and give reasons?</p> <p>Can they vary one factor whilst keeping the others the same in an experiment?</p> <p>Can they explain why they do this?</p> <p>Can they plan and carry out an investigation by controlling variables fairly and accurately?</p> <p>Can they make a prediction with reasons?</p> <p>Can they use information to help make a prediction?</p> <p>Can they use test results to make further predictions</p>

							and set up further comparative tests? Can they explain (in simple terms) a scientific idea and what evidence supports it? Can they present a report of their findings through writing, display and presentation?
Performing Tests	Can they perform a simple test? Can they tell other people about what they have done?	Can they carry out a simple fair test? Can they explain why it might not be fair to compare two things? Can they say whether things happened as they expected? Can they suggest how to find things out? Can they use prompts to find things out?	Obtaining and presenting evidence	Can they measure using different equipment and units of measure? Can they record their observations in different ways? (labelled diagrams, charts etc) Can they describe what they have found using scientific words? Can they make accurate measurements using standard units?	Can they take measurements using different equipment and units of measure and record what they have found in a range of ways? Can they make accurate measurements using standard units? Can they explain their findings in different ways (display, presentation, writing)?	Can they take measurements using a range of scientific equipment with increasing accuracy and precision? Can they record more complex data and results using scientific diagrams, classification keys, tables, bar charts, line graphs and models?	Can they explain why they have chosen specific equipment? (incl ICT based equipment) Can they decide which units of measurement they need to use? Can they explain why a measurement needs to be repeated? Can they record their measurements in different ways? (incl bar charts, tables and line graphs) Can they take measurements using a range of scientific

							equipment with increasing accuracy and precision?
Identifying and Classifying	<p>Can they identify and classify things they observe?</p> <p>Can they think of some questions to ask?</p> <p>Can they answer some scientific questions?</p> <p>Can they give a simple reason for their answers?</p> <p>Can they explain what they have found out?</p>	<p>Can they organise things into groups?</p> <p>Can they find simple patterns (or associations)?</p> <p>Can they identify animals and plants by a specific criteria, eg, lay eggs or not; have feathers or not?</p>	Considering evidence and evaluating and recording	<p>Can they explain what they have found out and use their measurements to say whether it helps to answer their question?</p> <p>Can they use a range of equipment (including a data-logger) in a simple test?</p>	<p>Can they find any patterns in their evidence or measurements?</p> <p>Can they make a prediction based on something they have found out?</p> <p>Can they record and present what they have found using scientific language, drawings, labelled diagrams, bar charts and tables?</p>	<p>Can they report findings from investigations through written explanations and conclusions?</p> <p>Can they use a graph to answer scientific questions?</p>	<p>Can they find a pattern from their data and explain what it shows?</p> <p>Can they use a graph to answer scientific questions?</p> <p>Can they link what they have found out to other science?</p> <p>Can they suggest how to improve their work and say why they think this?</p> <p>Can they record more complex data and results using scientific diagrams, classification keys, tables, bar charts, line graphs and models?</p> <p>Can they report findings from investigations through written explanations and conclusions?</p>

Recording findings	Can they show their work using pictures, labels and captions? Can they record their finding using standard units? Can they put some information in a chart or table?	Can they use (text, diagrams, pictures, charts, tables)to record their observations? Can they measure using simple equipment?					
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