SCIENCE

What are the key features of 'knowledge-rich' assessment for science?

Subject	Subject Features
SCIENCE	At both key stages the sticky knowledge takes full account of the national curriculum's main characteristics of: • Physics • Chemistry • Biology • Working scientifically
	The national curriculum specifies on a year-by-year basis what has to be taught. It must be remembered that science is a core subject and should have more time devoted to it than non-core subjects.
	The working scientifically is set out after the science knowledge has been set out for each year. In addition, suggests are given as to when the working scientifically aspects can be used each year.
	The working scientifically statements should be assessed as an ongoing feature of the science lessons, whilst the scientific knowledge should be assessed away from the point of teaching.
	When considering pupils' improvement in science specific vocabulary, see the identified subject specific vocabulary outlined in Focus Education's 'science knowledge mats'.

REC	
Biology	**Physics**
ELG The Natural World Children at the expected level of development will:	
Explore the natural world around them, making observations and drawing pictures of animals and plants.	Lets Explore Aut 1 Animal Safari Sum 1
Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.	Lets Explore Aut 1 Ready steady Grow Spr 2 Animal Safari Sum 1
Understand the effect of the changing seasons on the natural world around them.	Long Ago Spr 1 Signs of Spring Spr 2

Year 1				
Biology			**Chemistry**	**Physics**
Animals including humans ***Summer2***	***Animals including humans*** ***Autumn 2***	***Plants*** ***Summer 1***	***Everyday Materials*** ***Autumn 1***	***Seasonal Change*** ***Spring1/2***
Name common animals Carnivores, etc	Human body and senses	Common plants Plant structures	Properties of materials Grouping materials	The four seasons Seasonal weather
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	Know the name of parts of the human body that can be seen Know about the five senses.	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	Know the name of the materials an object is made from Know about the properties of everyday materials	Name the seasons and know about the type of weather in each season

Year 2				
Biology			**Chemistry**	
All Living Things and their Habitats ***Autumn 1***	***Animals including humans*** ***Autumn 2***	***Plants*** ***Spring 2***	***Everyday Materials*** ***Spring 1***	
Alive or dead Habitats Adaptations Food chains	Animal reproduction Healthy living Basic needs	Plant and seed growth Plant reproduction Keeping plants healthy	Identify different materials Name everyday materials Properties of materials	Compare the use of different materials Compare movement on different surfaces
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	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	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)	Know how materials can be changed by squashing, bending, twisting and stretching	Know why a material might or might not be used for a specific job
Physics (Additional) **Push and Pull** **Summer 1**				

Year 3					
Biology			Chemistry	Physics	
All Living Things and their Habitats **Autumn**	**Plants** **Summer**	**Plants** **Summer**	**Rocks** **Spring**	**Forces** **Spring**	**Light** **Summer**
Skeleton and muscles Nutrition Exercise and health	Plant life Basic structure and functions	Life cycle Water transportation	Fossil formation Compare and group rocks Soil	Different Forces Magnets	Reflections Shadows
Know about the importance of a nutritious, balanced diet Know about the skeletal and muscular system of a human	Know the function of different parts of flowing plants and trees	Know how water is transported within plants Know the plant life cycle, especially the importance of flowers	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	Know about and describe how objects move on different surfaces 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	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

Year 4				
Biology		**Chemistry**	**Physics**	
Animals including humans **Autumn 1**	**All Living Things and their Habitats** **Spring 2**	**Rocks** **Spring 1**	**Forces** **Summer 1/2**	**Light** **Autumn 2**
Digestive system Teeth Food chains	Grouping living things Classification keys Adaptation of living things	Compare and group materials Solids,liquids and gases Changing state Water cycle	Uses of electricity Simple circuits and switches Conductors and insulators	How sounds are made? Sound vibrations Pitch and Volume
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	Use classification keys to group, identify and name living things Know how changes to an environment could endanger living things Group materials based on their state of matter (solid, liquid or gas)	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	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, batteries 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	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

Year 5				
Biology		**Chemistry**	**Physics**	
All Living Things and their Habitats **Spring 1/2**	**Animals including Humans** **Summer 2**	**Properties and their changes in materials** **Summer 1/2**	**Forces** **Autumn 1**	**Earth and Space** **Autumn 2**
Life cycles – plants and animals Reproductive processes	Changes as humans develop from birth to old age	Compare properties of everyday materials Soluble/ dissolving Reversible and irreversible substances	Gravity Friction Forces and motion of mechanical devices	Movement of the Earth and the planets Movement of the Moon Night and day
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	Create a timeline to indicate stages of growth in humans	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	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	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)

Year 6				
Biology			Physics	
Animals including humans **Autumn 1/2**	**All living things and their habitats** **Spring 1/Summer 2**	**Evolution and Inheritance** **Summer 2**	**Electricity** **Spring 2**	**Light** **Summer 1**
The circulatory system Impact of exercise on body	Classification of living things and the reasons for it	Identical and non identical off-spring Fossil evidence and evolution Adaptation and evolution	Electrical components Simple circuits Fuses and voltage	How light travels Reflection Ray models of light
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	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	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	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	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.