PADSTOW SCHOOL - NATIONAL CURRICULUM PLANNING AND COVERAGE

SUBJECT: Science CREATED BY: Keziah Mainwaring February 2014 REVIEW DATE: July 2014

Purpose of study

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

Aims

The national curriculum for science aims to ensure that all pupils: develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

Scientific knowledge and conceptual understanding

The programmes of study describe a sequence of knowledge and concepts. While it is important that pupils make progress, it is also vitally important that they develop secure understanding of each key block of knowledge and concepts in order to progress to the next stage. Insecure, superficial understanding will not allow genuine progression: pupils may struggle at key points of transition (such as between primary and secondary school), build up serious misconceptions, and/or have significant difficulties in understanding higher-order content.

Pupils should be able to describe associated processes and key characteristics in common language, but they should also be familiar with, and use, technical terminology accurately and precisely. They should build up an extended specialist vocabulary. They should also

apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data. The social and economic implications of science are important but, generally, they are taught most appropriately within the wider Science

School curriculum:

Teachers will wish to use different contexts to maximise their pupils' engagement with and motivation to study science. The nature, processes and methods of science 'Working scientifically' specifies the understanding of the nature, processes and methods of science for each year group. It should not be taught as a separate strand. The notes and guidance give examples of how 'working scientifically' might be embedded within the content of biology, chemistry and physics, focusing on the key features of scientific enquiry, so that pupils learn to use a variety of approaches to answer relevant scientific questions. These types of scientific enquiry should include: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources. Pupils should seek answers to questions through collecting, analysing and presenting data. 'Working scientifically' will be developed further at key stages 3 and 4, once pupils have built up sufficient understanding of science to engage meaningfully in more sophisticated discussion of experimental design and control.

Attainment targets

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

Schools are not required by law to teach the content indicated as being 'non- statutory'.

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YEAR GROUP: 1	
Objectives	**Biologgy** • Identify basic plants • Idetify basic plant parts (root, leaves, flowers etc) • Identify and compare common animals • Identify and name basic body parts **Chemistry** • Distinguish between objects and materials • Identify and name common materials • Descirbe simple properties of some materials • Compare and classify materials **Physics** • Observe and name some light sources • Observe changes of day and season.

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<table>
<tr><th colspan="7">YEAR GROUP: 2</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Objectives</td><td colspan="6">Biology
• Differentiate living, dead and non-living
• Growing plants (water, light, warmth)
• Basic needs of animals & offspring
• Simple food chains & habitats

Chemistry
• Identify and compare uses of different materials
• Compare how things move on different surfaces

Physics
• Compare things moving on different surfaces
• Observe and name a variety of sound sources
• Recognise that sound gets fainter with distance</td></tr>
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YEAR GROUP: 3						
	Biology • Plants, incl. parts,lifecycle and requirements for life • Animals: skeletons & nutrition **Chemistry** • Classification of rock types • Simple understanding of fossilisation **Physics** • Sources of light; shadows & reflections • Simple forces, including magnetism					

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YEAR GROUP: 4						
H						
Objectives Objectives	**Biology** • Classify living things • Digestive system & teeth • Food chains **Chemistry** • Changes of state • The water cycle **Physics** • Sound as vibrations • Electricity: simple circuits & conductors					

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YEAR GROUP: 5						
Objectives	**Biology** • Life cycles of plants & animals (inc. mammal, insect, bird, amphibian) • Describe changes as humans develop & mature **Chemistry** • Classify materials according to a variety of properties • Understand mixtures & solutions • Know about reversible changes; identify irreversible **Physics** • Understand location and interaction of Sun, Earth & Moon • Introduce gravity, resistance & mechanical forces					

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YEAR GROUP: 6						
Objectives	**Biology** • Clasification, including micro-oganisms • Health and lifestyles, including circulatory systems • Evalution and adaption **Physics** • Light and shadow; the eye • Forces, including gravity • Electricity: investigating circuits					