**S2 Science Learner Journey**

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|  | **Learning Intention** | **Success Criteria – learners will be able to;** | **Planned Homework activities** | **Ways to Support Learning at Home** | **Assessment** |
| **Inquiry and investigative skills** | Dependant on Topic | Plan and design scientific investigations Carry out practical activities within a variety of learning environmentsAnalyse, interpret and evaluate scientific findingsPresent scientific findings | **N/A** | N/A | Practical Assessment in class. |
| **Passport of Skills** |
| * Please see Passport of Skills Audit
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| **Scientific analytical** **thinking skills** | Dependant on Topic | Applies scientific thinking skills while working with unfamiliar and complex contexts.Applies and combines knowledge and understanding from different areas of science to solve problems.Makes use of the engineering process in practical work to design, construct a model, test and modify the design to improve the solution. | **N/A** | **N/A** | End of Unit Knowledge and Understanding Assessment.Formative and Summative Skills Assessment. |
| **Passport of Skills** |
| * Please see Passport of Skills Audit
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| **Skills and attributes of scientifically literate citizens** | Dependant on TopicThrough research and discussion, I have contributed to evaluations of media items with regard to scientific content and ethical implications. | Demonstrates understanding of the relevance of science to their future lives and the role of science in an increasing range of careers and occupations.Demonstrates understanding of the impact of science on society. | **N/A** | **N/A** | End of Unit Knowledge and Understanding Assessment.Formative and Summative Skills Assessment. |
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| **Water and Solutions**  | I can differentiate between pure substances and mixtures in common use and can select appropriate physical methods for separating mixtures into their components.I have taken part in practical investigations into solubility using different solvents and can apply what I have learned to solve every day practical problems. | Gives examples of pure substances and mixtures from everyday life.Selects appropriate physical methods to separate mixtures into their components, for example, distillation, filtration and chromatography and justifies their choices.Investigates and describes the solubility of substances in different solvents, for example, water and acetone/propanone.Explains the link between the relative quantity of solute or solvent and changes in the concentration of a solution. | * Water and Solutions Knowledge and Understanding Exercises
 | * Review of class jotter
* Practice using the scientific terminology
 | * Practical Assessment in class
* End of Unit Knowledge and Understanding Assessment
* Formative and Summative Skills Assessment
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| **Bright Sparks** | Having measured the current and voltage in series and parallel circuits, I can design a circuit to show the advantages of parallel circuits in an everyday application.I can help to design simple chemical cells and use them to investigate the factors which affect the voltage produced. | Applies knowledge from practical investigations to describe the similarities and differences between series and parallel circuits and explain the advantages of parallel circuits in an everyday application. | * Electricity Knowledge and Understanding Exercises
 | * Review of class jotter
* Practice using the scientific terminology
 | * Practical Assessment in class
* End of Unit Knowledge and Understanding Assessment
* Formative and Summative Skills Assessment
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| **Passport of Skills** |
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| **Life, the Earth and Everything in it!** | I can sample and identify living things from different habitats to compare their biodiversity and can suggest reasons for their distribution.I have collaborated on investigations into the process of photosynthesis and I can demonstrate my understanding of why plants are vital to sustaining life on Earth. | Identifies living things using biological keys.Collects and analyses increasingly complex data and information, for example, temperature and light intensity, to suggest reasons for the distribution of organisms within different habitats.Describes the process of photosynthesis (using the word equation) in terms of reactants (raw materials) and products.Applies knowledge gained from practical investigations to explain how green plants make their own food in the form of sugars and store this as starch.Investigates and presents information on how plants help to sustain life, for example, by providing oxygen, food, habitat, raw materials and medicines. | * Biodiversity and Sampling Knowledge and Understanding Exercises
 | * Review of class jotter
* Practice using the scientific terminology
 | * Practical Assessment in class
* End of Unit Knowledge and Understanding Assessment
* Formative and Summative Skills Assessment
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| **Hard Rocks and Heavy Metals** | Through evaluation of a range of data, I can describe the formation, characteristics and uses of soils, minerals and basic types of rocks.I can participate in practical activities to extract useful substances from natural resources.I have helped to design and carry out practical activities to develop my understanding of chemical reactions involving the Earth’s materials. I can explain how we apply knowledge of these reactions in practical ways. | Applies knowledge of the rock cycle to describe the formation and characteristics of sedimentary, igneous and metamorphic rocks and gives at least one example of how each is used.Describes the formation and characteristics of loam, sand and clay soil types, providing examples of their uses, for example, in agriculture, building and beauty products.Researches the formation, characteristics and uses of at least two common minerals, for example, quartz or gypsum and communicates their findings to others using a range of media.Investigates and describes how at least two useful substances can be extracted from natural resources, for example, metal from mineral ores, dyes from plants and oils from plants. | * Rock Cycle and Metal Extraction Knowledge and Understanding Exercises
 | * Review of class jotter
* Practice using the scientific terminology
 | * Practical Assessment in class
* End of Unit Knowledge and Understanding Assessment
* Formative and Summative Skills Assessment
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| **May the Force Be With You**  | By contributing to investigations of energy loss due to friction, I can suggest ways of improving the efficiency of moving systems.I have collaborated in investigations into the effects of gravity on objects and I can predict what might happen to their weight in different situations on Earth and in space | Draws on findings from investigations to explain how lubrication, streamlining and other methods can be used to reduce friction, reducing the energy lost and improving efficiency.Knows that weight is a force caused by the Earth’s (or other planet’s) gravitational pull on an object, measured in newtons (N), and uses the formula W = mg to calculate weight.Predicts the effects on the weight of an object due to the gravitational field strength in different positions in the universe, for example, at different altitudes on Earth, on different planets and in deep space. | * Forces Knowledge and Understanding Exercises
 | * Review of class jotter
* Practice using the scientific terminology
 | * Practical Assessment in class
* End of Unit Knowledge and Understanding Assessment
* Formative and Summative Skills Assessment
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| **Passport of Skills** |
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| **It’s All About Me** | I have extracted DNA and understand its function. I can express an informed view of the risks and benefits of DNA profilingThrough research and discussion, I have contributed to evaluations of media items with regard to scientific content and ethical implications. | Knows that DNA is found in the nucleus of most cells and that it contains the instructions for the development and function of living things (genetic code).Describes a gene as a piece of DNA which controls specific characteristics in an individual and demonstrates understanding that every individual has a unique combination of genes.Describes DNA profiling as a way of using technology to analyse DNA to see a unique pattern for an individual and gives examples of practical applications (paternity tests and forensics).Presents reasoned arguments on the ethical implications of collection, processing, storage and ownership of genetic information or DNA profiles.  | * DNA Knowledge and

Understanding Exercises | * Review of class jotter
* Practice using the scientific terminology
 | * Practical Assessment in class
* End of Unit Knowledge and Understanding Assessment
* Formative and Summative Skills Assessment
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| **Space** | By using my knowledge of our solar system and the basic needs of living things, I can produce a reasoned argument on the likelihood of life existing elsewhere in the universe. | * Presents a reasoned argument on the likelihood of life existing elsewhere in the universe including factors such as: the distance of planets from their stars, the number of stars in the universe and the availability of liquid water, nutrients and energy.
 | Space Knowledge and Understanding Exercises | Review of class jotterPractice using the scientific terminology | Practical Assessment in classEnd of Unit Knowledge and Understanding AssessmentFormative and Summative Skills Assessment |
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