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|  Squirrels Class Medium Term Planning for **Science Summer 2023** |
| **Topic: Flight****Scientists and Inventors** * Identify and compare material properties
* Suitability of everyday materials
* Franz Reichelt (parachute inventor)
* Pilatre De Rozie (first hot air balloon flight)
* Dr. Robert Hutchings Goddard (first liquid-fueled rocket)
* The Whittle Brothers (aeroplanes)
 | We will explore materials related to flight and conduct simple experiments. We will also learn about Scientists and Inventors. In History we will learn about The Whittle Brothers. In English we will learn about Amelia Earhart as a female pioneer.We will visit the airport viewing centre this term too. |

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| **Lesson 1 – Link it****What materials are used in flight?**We will use what we know about materials to identify materials used in planes and why.For example:Metal for strength and waterproofFabric for comfy seatsNylon for hot air balloon flightElectronics and chemicals to make them work. | **Lesson 2,3 – Learn it, Check it****Franz Reichelt and Parachutes**We will learn about parachutes and the materials they use. We will identify the materials used and why they are suitable. We will create our own parachutes for a toy character. | **Lesson 4, 5 – Learn it, Check it** **Pilatre De Rozie and Hot Air Balloons**We will learn about the invention of hot air balloons and how inventors tried and tested lots of ways before they were successful. We will identify the materials used and why they are suitable. We will test alternative materials and think about why they are unsuccessful.  | **Lesson 6,7 – Learn it, Check it****Dr Robert Goddard and Rockets**We will learn about the invention of liquid fuel rockets and how this was extended to create rockets for humans to visit space. We will identify the materials used and why they are suitable. We will create a vinegar and baking soda rocket launch. | **Lesson 8, 9 – Learn it, Check it****The Whittle Brothers and Aeroplanes**We will apply our History learning about the first flight to Science. We will create paper airplanes and test to see who’s will fly the furthest. Will scrunched up paper fly – why? | **Lesson 10 - Show it****Airport Trip**We will visit The Airport Viewing Centre to watch flight in action and apply our learning to real airplane action. | **Lesson 11 – Know it****Reflection**We will look at photos from our trip, and our experiments, and discuss what we have learn this term. |

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| Substantive Knowledge (Content) | Disciplinary Knowledge (Skills)  |
| **EYFS** **C&L -L&A** Make comments about what they have heard and ask questions to clarify their understanding.**UTW-TNW**1. Explore the natural world around them, making observations and drawing pictures of animals and plants.
2. 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.

Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter**KS1 Science National Curriculum**Asking Questions and carrying out Fair and Competitive Tests Asking simple questions and recognising that they can be answered in different ways.Performing simple tests.Children can:a explore the world around them, leading them to ask some simple scientific questions about how and why things happen;b begin to recognise ways in which they might answer scientific questions;c ask people questions and use simple secondary sources to find answers;d carry out simple practical tests, using simple equipment;e experience different types of scientific enquiries, including practical activities;f talk about the aim of scientific tests they are working on. Observing and Measuring Changes Observing closely, using simple equipment.Children can:a observe the natural and humanly constructed world around them;b observe changes over time;d make careful observations, sometimes using equipment to help them observe carefully.Identifying, Classifying, Recording and Presenting Data Identifying and classifying.Gathering and recording data to help in answering questions. Children can:a use simple features to compare objects, materials and living things;b decide how to sort and classify objects into simple groups with some help;c record and communicate findings in a range of ways with support;Drawing Conclusions, Noticing Patterns and Presenting Findings Using their observations and ideas to suggest answers to questions.Children can:e use simple and scientific language; | **EYFS*** Explore and talk about different forces they can feel.
* Explore how things work- provide mechanical equipment for children to play with and investigate.
* Use all their senses in hands-on exploration of natural materials.
* Explore collections of materials with similar and/or different properties
* Explore materials with different properties.
* Explore natural materials, indoors and outside.
* Talk about the differences between materials and changes they notice.
* Talk about changes.
* Sort materials using simple criteria and communicate observations of materials in terms of these properties.,
* Explore changing material by squashing, twisting, bending etc and pay attention to the results
* Investigate changing materials by mixing, heating and cooling.
* Investigate separating mixed materials with suitable basic equipment

**EYFS Working Scientificially*** Explore and respond to different natural phenomena in their setting and on trips
* Realise that their actions have an effect on the world, so they want to keep repeating them.
* Repeat actions that have an effect.
* Plan and think ahead about how they will explore or play with objects.
* Guide their own thinking and actions by referring to visual aids or by talking to themselves while playing.
* Bring their own interests and fascinations into early years settings.
* Respond to new experiences that you bring to their attention.
* Talk about what they see, using a wide vocabulary.
* Use pretend play to think beyond the ‘here and now’
* Know more, so feel confident about coming up with their own ideas.
* Make more links between those ideas.
* Concentrate on achieving something that’s important to them. They are increasingly able to control their attention and ignore distractions.
* Engage in non-fiction books related to science.
* Listen to and talk about selected non-fiction to develop a deep familiarity with new knowledge and vocabulary.
* Make some simple predictions verbally or using AAC
* Record findings using a scribe, pictures, photographs or symbols
* Alert/attend/anticipate/respond to/initiate activities related to investigations.
* Sort by obvious differences
* Begin to measure and compare with support in non-standard units.

With prompting, ask a few simple questions about the world around**KS1*** Notice and describe how things move, using simple comparisons such as faster and slower.
* Describe basic movements.
* Learn that magnets ‘stick’ to some objects and not others.
* Observe the use of non-slip surfaces e.g. slippers, trainers, tyres etc.
* Distinguish between an object and the material from which it is made.
* Describe the simple properties of a variety of everyday materials.
* Identify and compare the uses of a variety of everyday materials, including wood, metal, plastic, glass, brick/rock, and paper/cardboard.
* Investigate and compare the uses of different materials.
* Compare and group together a variety of everyday materials on the basis of their simple physical properties.

KS1 Working Scientifically* Ask simple questions.
* Observe closely, using simple equipment.
* Perform simple tests.
* Identify and classify.
* Use observations and ideas to suggest answers to questions.
* Gather and record data to help in answering questions.
* Make accurate measurements using standard units and a range of equipment. E.g. thermometers and data loggers.
* Begin to recognise that questions be answered in different ways (different types of enquiry including - observing changes over time, noticing patterns, grouping and classifying, carrying out simple comparative tests, finding things out from secondary sources).
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**Progression of Learning**

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| ‘Link It’  | ‘Learn It’ | ‘Check It’  | ‘Show It’ | ‘Know It’ |
| Applying knowledge of materials and properties to flight.  | Discovering key Scientists and Inventors. Learning about their impact on our world. | Application of knowledge of each noteable person by trying out a themed STEM challenge. | Visit to The Airport. | Reflection upon learning this term using photos to help. |