BACK TO THE FUTURE

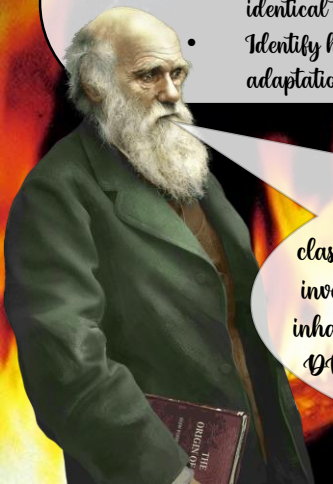
Science

What we should already know:

- Recognise that living things can be grouped in a variety of ways
- Explore and use classification keys to group, identify and name a variety of living things in their local and wider environment
- Recognise that environments can change and that this can sometimes pose dangers to living things
- Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird
- Describe the life process of reproduction in some plants and animals

As scientists we will:

- Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago
- Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents
- Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution



Vocabulary:

classify, classification, groups, characteristic, organism, micro-organism, invertebrates, vertebrates, virus, thorax, arthropod, arachnid, antenna, inhabited, offspring, identical, adaptation, variation, environment, genes, DNA, evolution, inherit, Charles Darwin, artificial selection, natural selection, advantageous, extinction

Science

What we should already know:

- Identify common appliances that run on electricity
- Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers
- Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery
- Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit
- Recognise some common conductors and insulators, and associate metals with being good conductors

As scientists we will:

- Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in a circuit
- Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and on/off position of switches
- Use recognised symbols when representing a simple circuit in a diagram

Vocabulary:

voltage, negative terminal, positive terminal, parallel circuit, resistance, appliance, circuit, series circuit, charge, cell, wire, bulb, switch, buzzer, loop, battery, open circuit, closed circuit, conductor, insulator, components, electron, current, static electricity, emit

Working Scientifically

What we should already know:

- Ask relevant questions and use different types of scientific enquiries to answer them
- Identify one or more control variables in investigations when conducting a fair test
- Identify which type of measurements should be taken
- Take accurate and appropriate measurements using specific, provided equipment
- Record data and results (e.g. using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs)
- Use test results to make predictions
- Report and present findings from enquiries with a given format

As scientists we will:

- Ask relevant questions and use different types of scientific enquiries to answer them
- Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- Recognise which type of practical enquiry is most appropriate to the question or idea being investigated, before planning and carrying out the enquiry
- Take measurements, using a range of scientific equipment, with increasing accuracy and precision
- Identify when to take repeat readings when appropriate
- Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- Report and present findings from enquiries, including conclusions, causal relationships and explanations of results, in oral and written forms such as displays and other presentations.
- Identify scientific evidence that has been used to support or refute ideas or arguments.

Vocabulary:

controlled variables, comparative, enquiry, predict, present, explain, conclusion, causal relationship, fair test, patterns, observations, accurate, precise, measurements, data, opinion, fact, communicate, diagram, labels, line graph, repeat readings, justify

Design Technology

What we should already know:

- How to design purposeful, functional, appealing products for themselves and other users based on design criteria
- How to generate, develop, model and communicate their ideas through talking, drawing, templates, mock ups and, where
- appropriate, information and communication technology.
- How to build structures, exploring how they can be made stronger, stiffer and more stable
- Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.

As Design Technologists we will:

- Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups
- Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross sectional and exploded
- diagrams, prototypes, pattern pieces and computer aided design
- Understand and use electrical systems in their products

Vocabulary:

functional, ergonomic, construction, purpose, criteria, usability, develop, dimension, evaluate, innovate, manufacture, material, modification, modify, process, product, prototype, quality, research, safety, suitable, consumer, malleable, proportion, circuit, friction, force, linear, linkage, resistance, complex

Science

What we should already know:

As scientists we should already be able to:

- Recognise that we need light in order to see things and that dark is the absence of light
- Notice that light is reflected from surfaces
- Recognise that light from the sun can be dangerous and that there are ways to protect our eyes
- Recognise that shadows are formed when light from a light source is blocked by an opaque object
- Find patterns in the way that the size of shadows change

As scientists we will:

- Recognise that light appears to travel in straight lines
- Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye
- Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes
- Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them

Vocabulary:

absorb, phenomena, angle of incidence, angle of reflection, refraction, spectrum, periscope

History

What we should already know:

- Identify and whether a source is primary or secondary
- Ask questions to further my understanding of the past.
- Identify and understand facts and opinions within a written historical source.
- Make inferences about the past using specific sources of evidence.
- Understand that the past can be represented in different ways and different sources of information provide different viewpoints.

As historians we will:

- Evaluate the usefulness and accuracy of different sources of evidence.
- Suggest accurate and plausible reasons for how/why aspects of the past have been represented and interpreted in different ways.
- Select the most appropriate source of evidence for a particular task.

Vocabulary

Reliability, subjective, objective, bias, justification, the source omits to mention that… plausible, interpret, validity, concurrently.

Computing

What we should already know:

- Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.
- Create and debug simple programs.
- Use logical reasoning to predict the behaviour of simple programs.

As computer technologists:

- Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.
- Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.
- Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.

- Vocabulary

Broadcast messages, loops, effectiveness.

Geography

What we should already know:

As geographers we should already be able to:

- Use an infant atlas to locate places.
- Draw a detailed map with symbols and a key.
- Use four figure grid references.

As geographers we will:

- Use maps, atlases, globes and digital/computer mapping.
- Use maps to explore how a location has changed over time.

Vocabulary

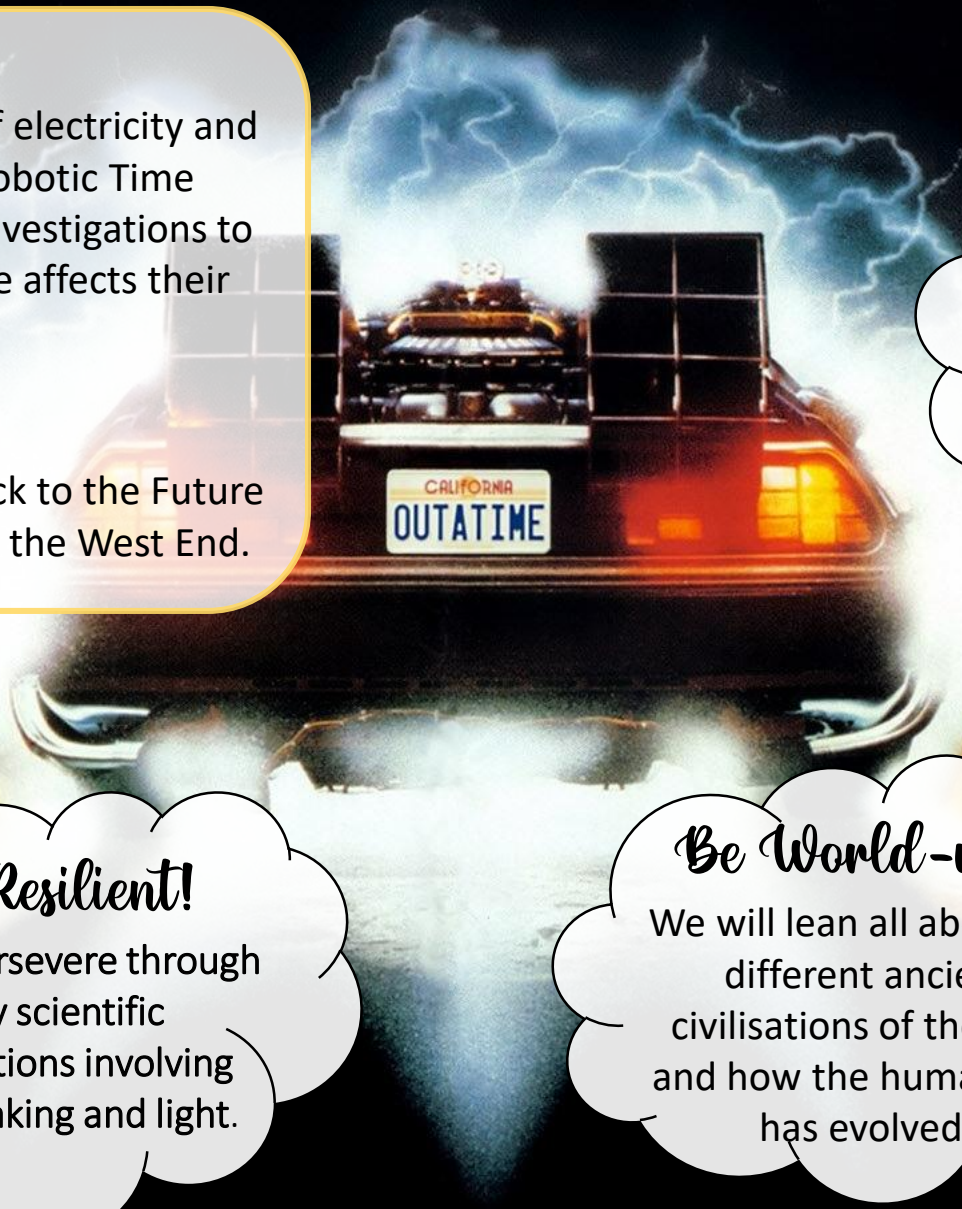
scale, accuracy, precise, observe, terrain, political map, physical map, sea level, cardinal points, time zones.

Application

We will use our scientific knowledge of electricity and circuits to design, create and test robotic Time Machines. We will conduct scientific investigations to test how different amounts of voltage affects their speed and movement.

WOW!

We will travel to London to watch a Back to the Future play at the famous Adelphi Theatre on the West End.



Be Creative!

We will design and create a robotic time-travel machine and use coding to enable it to move!

Be Resilient!

We will persevere through tricky scientific investigations involving circuit making and light.

Be World-wise!

We will lean all about the different ancient civilisations of the past and how the human race has evolved!