

Spirit of Innovation

STEAM Resources



Science

Year Six

Electricity

Circuits

Links

Working scientifically

- Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- Using test results to make predictions to set up further comparative and fair tests
- Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations
- Identifying scientific evidence that has been used to support or refute ideas or arguments.

Electricity

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

Resources

- Circuits Revision ([Download](#))
- Electric Powertrain PowerPoint ([Download](#))
- Blueprint ([Download](#))
- Wires
- Batteries
- Bulbs
- Buzzers
- Motors
- Solar Cells (optional)
- Pencils
- Rulers

<https://www.tts-group.co.uk/primary/dt/electricity/>

Skills

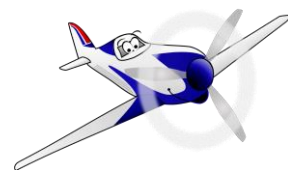
- Working as a pair
- Working in a team
- Discussing ideas
- Collaboration and compromise
- Planning and designing
- Accurate circuit drawings

Questions

- What components of the plane do you want to move, light up or make a noise?
- What electrics are you going to use in your design?
- Are you planning on using a parallel or series circuit? Explain why?



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- Understanding circuits – the difference between parallel and series
- Report back findings
- Improve designs based on findings – debug circuit designs if necessary

Activity

Activity One

Whole Class/Pairs/Individual
(30 – 40 mins) x2

With a link to engineering; pupils should be given the opportunity to design and build a moving electric plane.

Before pupils start their plans, there is an opportunity to revise and revisit their knowledge of electricity and circuits with an Electricity PowerPoint ([Download](#))

Linked to this PowerPoint there is an Electric Powertrain PowerPoint ([Download](#)) This is an introduction to how The Spirit of Innovation aeroplane is swapping fuel for batteries.

When planning their plane, pupils should be encouraged to design a circuit that contains 2-3 electrical components including motor, lights and buzzer. These plans can be created in pairs or individually.

Using the Blueprint ([Download](#)) pupils should record the electrical circuit that they plan to install into their plane. E.g. moving undercarriage and or propeller, landing lights, control panel lights and/or buzzers.

** A micro:bit compass could also be included in this design with links to technology*

Activity Two

In Pairs/Whole Class
(30 - 40 mins)

<https://www.tts-group.co.uk/primary/dt/electricity/> A link to suitable resources for this project if required.

Using the blueprint from Activity One create the electrical circuit to test that it works.

If some of the components do not work in the way they should re-address the circuit diagram and the physical circuit, to work out where the error is occurring. Remembering to alter the circuit diagram for future reference; when creating the plane in engineering.



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