

Our DT Curriculum gives children the opportunity to develop skills, knowledge and understanding through designing and making functional products for a range of different users. They learn about key inventions and designers. Children are encouraged to think creatively and produce innovative designs as they explore the designed and made world in which they live.



YEAR 5

Subject: DT
Unit: Electronics & control – Burglar Alarm

Characteristics of an Effective Learner

Courage
Commitment
Collaboration
Creativity
Curiosity

Prior Learning:

- Year 4 - Learning about electricity and circuits in Science.
- Year 4 – Use knowledge of electrical circuits to make a Steady Hand Game.
- Year 4 – Programming a micro:bit to monitor performance on a Steady Hand Game.

Key Vocabulary taught in this unit:

Artefact, circuit, alarm, light sensor, trouble shooting, micro:bit, program, monitor, control

Intent: What do we want the children to know, be able to do by the time they complete this unit?

Design

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 / investigate and analyse a range of existing products.

Design a light sensitive burglar alarm that could be used by a museum to alert staff if an artefact was removed from its stand.

Research into how different burglar alarms are triggered eg. movement/light sensor, broken connection in an electrical circuit, laser beam etc.

Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.

Produce an annotated circuit diagram for their burglar alarm.

Produce step by step instructions for making their burglar alarm using the correct technical vocabulary.

Make

Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately/ apply their understanding of how to strengthen, stiffen and reinforce more complex structure.

Select appropriate materials to make the stand for their artefact.

Select the appropriate electrical components needed to construct their burglar alarm.

Evaluate

Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.

Be able to make modifications to their burglar alarm during manufacture and explain why.

Develop their own criteria for evaluating the success of their burglar alarm.

Understand the role played by Ada Lovelace in the development of the first computers.

Learn about the invention of closed circuit television security by Marie Van Britten Brown.

Technical knowledge

Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]

Create an electrical circuit which incorporates a micro:bit.

Be able to trouble shoot a circuit which isn't working properly.

Apply their understanding of computing to program, monitor and control their products.

Programme a micro:bit to monitor light levels and sound an alarm if a given light level is reached.

Impact / Outcome:

What will the final product / result be?

Design brief: Design and make a light sensitive burglar alarm that could be used by a museum to alert staff if an artefact was removed from its stand.

P4C Inquiry (where appropriate) – n/a