

Newquay Junior Academy - Spring Sequence – Design and Technology.



YEAR 3

Prior knowledge...

The parts of an object that move together as part of a machine is called a mechanism.
A lever is something that turns on a pivot and that a linkage is a system of levers that are connected by pivots.

YEAR 4

Prior knowledge...

Electricity is the flow of electrical power or charge.
An electrical circuit comprises of electrical components.
A battery is an electrical power source
A circuit must form a loop for electrical current to flow.

YEAR 5

Prior knowledge...

Pupils can:

Follow a recipe, with some support.
Describe some of the features of sushi based on taste, smell, texture and appearance.
Adapt a recipe by adding extra ingredients to it.
Plan a sushi recipe within a budget.

YEAR 6

Prior knowledge...

Pupils can:

A structure is something which stands, usually on its own.
The strength of structures can be affected by the shapes used.
Forces can change the shape of objects, they can also make objects begin to move, speed up or slow down.
I can measure, saw and join wood accurately.

INTENT

Mechanical Systems: Pneumatic toys

Pupils design and create a toy with a pneumatic system, learning how trapped air can be used to create a product with moving parts while also building on their design knowledge. They will then be introduced to thumbnail sketches and exploded diagrams

Electrical systems: Torches

In this topic, children apply their scientific understanding of electrical circuits to create a torch made from easily available materials and objects. They will also design and evaluate their product against set design criteria.

Food: What could be healthier? South American stew

Pupils will:

Understand how beef gets from the farm to our plates.
Notice the nutritional differences between different products and recipes.
Recognise nutritional differences between two similar recipes and give some justification as to why this is.
Work as a team to amend a recipe with healthy adaptations.
Follow a recipe to produce a healthy meal – South American stew.

Structures: Anderson shelter

Pupils will:

Understand the historical significance of an Anderson shelter, including how they were constructed and what materials they were made from. Children will research, design and make their own air raid shelter selecting from a range of materials. Pupils will carry out a series of tests in order to evaluate the effectiveness of their shelter.

VOCABULARY / STICKY KNOWLEDGE

Exploded diagram, function, input, linkage, mechanism, motion, net, output, pivot, pneumatic system, thumbnail sketch

Battery, bulb, buzzer, cell conductor, copper, design criteria, electrical item, electricity, electrical item, insulator, series circuit, switch, test, torch, wire

Beef, reared, processed, ethical, diet, ingredients, supermarket, farm, balanced, healthy, adapt, nutrition

Anderson Shelter, Construction, structure, Strength, Compressive force, Resist, Sheet metal, Corrugated metal, Steel, Iron, rust, Galvanized/galvanization, Modelling/ prototypes, Tin snips, File, Wet and dry paper

SEQUENCE OF LESSONS

Lesson 1: Exploring pneumatics

In this practical lesson, children investigate and explore different pneumatic systems.

Lesson 2: Designing a pneumatic toy

The children use their understanding of pneumatics to design their own pneumatics toys through thumbnail sketches and exploded diagrams.

Lesson 3: Making pneumatic toys

Children create a working pneumatic system and casing for their toys.

Lesson 4: Decorating and assembling my toy

Pupils add decorations and assemble the final components to complete their pneumatic toys.

Lesson 1: Electrical products

Pupils explore the difference between 'electrical' and 'electronic' and revisit how to create a simple circuit.

Lesson 2: Evaluating torches.

Pupils evaluate a range of different torches and identify the features of a torch: housing, reflector, circuit and switch.

Lesson 3: Torch design

Pupils create a torch design, building on their understanding from and incorporating features they have identified in previous lessons.

Lesson 4: Torch assembly

The children build the circuit and housing for their torches, closely following their designs

Lesson 1: From farm to fork

To understand where food comes from

Lesson 2: What does healthy look like?

To understand the term 'healthy'

Lesson 3: Adapting and improving a recipe

To adapt a traditional recipe

Lesson 4: Mamma mia! What a tasty, healthy stew!

Lesson 1: Research

To understand the significance of the Anderson Shelter and how they were made.

Lesson 2: Design

To design their own shelter following a strict specification and drawing on their understanding of structures.

Lesson 3: Making

To construct an air raid shelter selecting the most appropriate materials and tools for the job.

Lesson 4: Testing and evaluating.

To carry out a series of tests to test their shelter and suggest improvements.

from the previous lesson.

OUTCOME / COMPOSITE

To create a pneumatic toy of a dragon.

Children make a torch using an electrical circuit and a housing made from recycled materials.

To have adapted a recipe to make it healthier.

To have made a prototype of a robust aid raid shelter.

Newquay Junior Academy - Spring Sequence 2 – Design and Technology.



YEAR 3

Prior knowledge...

Pupils can:
Sew a running stitch with regular-sized stitches and understand that both ends must be knotted.
Prepare and cut fabric to make a pouch from a template.
Use a running stitch to join the two pieces of fabric together.
Decorate their pouch using the materials provided.

INTENT

Textiles: Cushions - making a cushion out of recycled materials.

Pupils will:
Use a cross-stitch to join two pieces of fabric together.
Design and cut the template for a cushion.
Use cross-stitch and appliqué to decorate a cushion face.
Make a cushion that includes appliqué and cross-stitch.

VOCABULARY / STICKY KNOWLEDGE

Appliqué, cross-stitch, design, equipment, fabric, patch, running stitch, thread, seam, texture, knot

SEQUENCE OF LESSONS

Lesson 1: Cross-stitch and appliqué

To learn how to sew cross-stitch and appliqué

Lesson 2: Cushion design

To design a product and its template

Lesson 3: Decorating my cushion

To decorate fabric using appliqué and cross stitch

Lesson 4: Assembling my cushion

To assemble your cushion

OUTCOME / COMPOSITE

Pupils will have designed and made a cushion out of recycled fabric