Design Technology Knowledge

Year 1

Term 1 – Food

Key Vocabulary:

appearance, blend, dip, dipper, grate, ingredient, mineral, peel, slice, texture, unsaturated, vitamins

Substantive Knowledge

Pupils will:

- identify hummus, guacamole, salsa, raita and thousand island as a dip, showing an awareness of the countries of origin for each dip
- list examples of food groups, using the Eat Well Plate as a reference
- explain different food hygiene rules

Procedural Knowledge

Pupils will:

- evaluate food dips and dippers in the current market, understanding the importance of using specific criteria to assess food products
- taste test and rate food dips based on sensory attributes, recording their evaluations and observations
- design their own dip based on agreed-upon criteria, considering factors such as taste, nutrition, appearance, and target audience
- decide on the ingredients to include in their dip, considering their design criteria whilst learning to balance flavours and textures for a desirable end product
- use the bridge and claw grip techniques for chopping ingredients safely whilst using a knife
- evaluate their own dips and those created by their peers by using criteria established

Aletheia Academies Trust

St Botolph's C of E Primary School

Year 2

Term 1 – Lunch Boxes

Key Vocabulary:

tools, equipment, materials, protect, structure, stiffer, waterproof, stronger, hinge, join, tape, criteria, evaluate, specification

Substantive Knowledge

Pupils will:

- know a design criteria is a list of things that a product must do to be successful
- define a structure as a building or other object constructed from a few different parts
- recognise a material that is waterproof if it prevents water from passing through it
- identify a hinge as a moveable joint that allows a lid to open and close

Procedural Knowledge

Pupils will:

- identify the problem or challenge they need to address and attempt to solve
- establish a design criteria that their lunchbox must meet
- evaluate existing products, considering factors such as design, material, durability and waterproofing
- explore different materials that could be used to make a lunchbox, considering the properties of materials in relation to strength and waterproofing
- conduct experiments to test the properties of the materials
- draw diagrams and label the materials they plan to use
- construct a hinge for a lunchbox lid, understanding the mechanical aspects of creating a functional hinge that allows the lid to open and close securely

- follow a design plan to construct a lunchbox, assembling and joining materials
- evaluate their own and others' lunchboxes, reflecting on how well they met the established criteria

Year 3

Term 1 – Kites

Key Vocabulary:

analyse, sail, join, bridle, design criteria, tow point, structure, test, spars, frame,

Substantive Knowledge

Pupils will:

- list and label the parts of a kite: tow point, line, bridle, spars, keel, sail and tail
- recognise the importance of each part of a kite, suggesting the consequence of each part missing
- name different kite designs such as diamond, rokkaku, delta and sled

Procedural Knowledge

Pupils will:

- create their own kite design, considering factors such as size, shape, materials, and stability while adhering to an agreed-upon design criteria
- draw an exploded diagram that illustrates the components and assembly sequence of their kite design
- choose appropriate materials for their kite, considering factors such as weight, strength and flexibility
- become familiar with the tools and equipment required for kite construction, including scissors, glue, string and cutting tools
- test their kits, making adjustments to their designs afterwards

- evaluate their own and other's kites, reflecting on how well they met the agreed design criteria

Year 5

Term 1 – Mechanical Systems

Key Vocabulary:

cam, follower, linear motion, rotary motion, mechanical system, mechanism, component, guide, axle, framework, measure, finish, evaluate

Substantive Knowledge

Pupils will:

- recognise a cam as a rotating disk shape that converts rotary into linear motion
- recognise a follower as a component which follow the movement of the cam
- identify difference between linear and rotary motion, describing linear as a straight line and rotary as going around
- list different cam shapes and suggest reasons for using them in a product

Procedural Knowledge

Pupils will:

- analyse different products that incorporate cam and follower mechanisms to identify how they are used and their purposes
- explore different cam shapes, learning how the shape of the cam affects the movement of the follower
- create their own cam shapes, experimenting with various designs to achieve specific movements
- use the CAFEQUES mnemonic to undertake a product analysis, considering these factors when designing their own mechanical system
- construct a framework of their mechanical animals using a range of tools safely

- create and integrate the cam and follower mechanism into their mechanical animal, ensuring that it functions according to their design specifications
- test their mechanical animals to evaluate how well they achieve the desired movements and functions
- evaluate their mechanical animals against the design brief and criteria set at the beginning of the project

Year 6

Term 1 – Structures

Key Vocabulary:

support, stiffen, sturdy, stable, strengthen, reinforce, structure, free standing, functional, join, aesthetics, iterative design, evaluate

<u>Substantive Knowledge</u>

Pupils will:

- define a free-standing structure as a structure that stands alone or on its own foundation, free of support or attachment
- identify a wide base or the use of a buttress as important techniques to ensuring a structure has stability when it is built

<u>Procedural Knowledge</u>

Pupils will:

- build the tallest free-standing structure they can using a construction kit, applying concepts of stability and engineering
- join materials using given techniques, showing an understanding of the importance of secure connections for structural integrity
- create a bridge structure by connecting two towers, learning to distribute the load evenly to support the weight of the marble

- explore and manipulate different materials to understand their properties and flexibility
- brainstorm and propose various ideas and solutions for optimising the performance of their marble run
- construct marble runs, incorporating towers, bridges, bends, and other elements
- observe and test their marble runs, evaluating the effectiveness of their design in meeting the challenge and make any modifications for improvement