DESIGN AND TECHNOLOGY OVERVIEW

GOLCAR JUNIOR INFANT AND NURSERY

INTENT STATEMENT

Why is it important to learn Design and Technology?

Design and Technology helps children to think creatively and solve real life problems, supporting them in their day to day lives and within the wider world. Children gain confidence in participating in an increasingly technological world as well as developing practical and critical thinking skills. The Cooking and Nutrition element ensures children understand the importance of leading a healthy lifestyle. Design and Technology has no limits and children are encouraged to use their imagination and take risks, designing, making and evaluating new products whilst developing important life skills, including technical knowledge, that can be applied to every aspect of their future.

What does Design and Technology look like at Golcar JIN?
Our Design and Technology curriculum is taught using the Kapow scheme. This provides opportunities for our children to develop their questioning skills and nurture their curiosity so they can explore how things work or investigate why they may not. We also encourage perseverance and resilience when designing, creating and evaluating products and teach children how to use a range of tools safely.

Progressive knowledge and skills are taught through:

- Cooking and nutrition
- Structures
- Mechanisms / Mechanical systems
- Electrical systems (KS2)
- Textiles
- Digital World (KS2)

How do we promote Design and Technology learning?

Through themed days for ‘design and make’ projects to allow opportunities for children to consolidate their skills, applying trial and error and perseverance if things don’t go according to plan. School wide, we have an annual ‘Science and Engineering Week’ promoting the important links with Science, Maths and Computing.

HOW OUR DESIGN AND TECHNOLOGY CURRICULUM MEETS OUR COMMUNITIES NEEDS

As a school we have chosen to follow the Kapow scheme of work. The scheme has been authored by experts in their field. It supports pupils to meet the National Curriculum end of key stage attainment targets and provides clear progression of learning throughout key stage 1 and 2.

It is organised around six key areas (Structures; Mechanisms; Textiles; Electrical systems; Digital world; and Cooking and nutrition) and four key strands (Design, Make, Evaluate, and Technical Knowledge) but provides relevant cross-curricular opportunities to help us ensure that it fits with the rest of our curriculum offer and meets our community needs.

	Autumn Term	Spring Term	Summer Term
EYFS	Structures Junk Modelling Cooking and Nutrition Soup Hibernation Box Sliding Picture	Textiles – Bookmark Flower threading Easter Hanging Decoration	Structures – Boats Design and make a rainbow salad
Yr1	Autumn2 Textiles – Pantomime puppets	Spring1 Smoothies	Summer1 Wheels and Axels – Making a Vehicle
Yr2	Autumn 2 Structures – making a moving monster	Spring 2 Mechanisms – baby bears chair	Summer1 Food and nutrition (balanced diet – making a wrap)

Yr3	Autumn 1 Textiles – Fastenings (year 4 as year 3)	Spring1 Cooking a nutrition – Eating seasonally	Summer 1 Mechanical systems – Pneumatic toys
Yr4	Autumn Cooking and Nutrition – adapting a recipe (biscuits) Textiles Tutankhamum	Spring 2 Structures – Pavilions (Electrical systems – torches (4 – link with science first 2 lessons could be skipped)	Summer 2 Mechanical systems – making a slingshot car Digital world -Mindful moments timer (taught in computing)
Yr5	Mechanical systems – making a pop up book Digital world – monitoring devices (Taught in ICT)	Cooking and nutrition – Developing a recipe – Adapt from Bolognese	Electrical systems - doodlers
Yr6	Autumn	Spring Cooking and nutrition – Come Dine with Me Electrical systems – steady hand game	Summer Structures – Playgrounds Textile – waistcoats

GOLCAR GOALS – EYFS

Cooking and nutrition

Recognise and name some common vegetables.

Structures

Know that there are a range of different materials that can be used to make a model and they are all slightly different.

Textiles

Know that a design is a way of planning our idea before we start.

To know that threading is putting one material through an object.

GOLCAR GOALS – YEAR 1

Cooking and Nutrition

Understand the difference between a fruit and vegetable.

Textiles

Know different ways to join fabrics together (stapling, gluing, pinning).

Mechanisms

Understand that for a wheel to move it must be attached to a rotating axle.

Know that an axel moves within an axel holder which is fixed to a vehicle or toy.

Know that the frame of a vehicle (chassis) needs to be balanced.

Know some real-life items that use wheels such as wheelbarrows, hamster wheels and vehicles.

GOLCAR GOALS – YEAR 2

Cooking and Nutrition

Know that the five main food groups are: carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar.

Understand what makes a balanced diet.

Understand that I should eat a range of different foods from each group, and roughly how much of each food group.

Structures

Know that shapes and structures with wide, flat bases or legs are the most stable.

Know that a structure is something which has been formed or made from parts.

Know that natural structures are found in nature an man-made structures are those made by people.

Mechanisms

Identify mechanisms in everyday objects.

Know that there is an input and an output in a mechanism.

Know that a lever is something that turns on a pivot.

Know that mechanisms are a collection of moving parts that work together as a machine to produce movement.

GOLCAR GOALS – YEAR 3

Textiles

Thread a needle and tie a knot with greater independence.

Know that a fastening is something which holds two pieces of material together (e.g. zipper, toggle, button, press stud and Velcro).

Know that different fastening types are useful for different purposes.

Cooking and Nutrition

Use cooking equipment safely.

Know that not all foods can be grown in the UK. Some foods are imported from different countries and we export food to other countries.

Know that climate affects food growth.

Know that vegetables and fruit grow in different seasons and eating seasonal foods can have a positive impact on the environment.

Know that different fruit and vegetables give us different nutrients.

Mechanisms / mechanical systems

Understand how pneumatic systems work.

Understand that pneumatic systems can be used as part of a mechanism.

Know that pneumatic systems operate by drawing in, releasing and compressing air.

GOLCAR GOALS – YEAR 4

Cooking and Nutrition
Know that safety and hygiene are important when cooking.
Understand the importance of budgeting while planning for ingredients.
Know the following cooking techniques: sieving, measuring, stirring, cutting out and shaping.

Textiles
Know that fabrics can be layered for effect.
Know that it is important to leave space on the fabric when joining two pieces to create a seam.
Understand that some products are turned inside out after sewing so the stitch is hidden.

Structures
Understand what a frame structure is.
What that a ‘free-standing’ structure is one which can stand on its own.

Electrical Systems
Understand that electricity can pass through electrical conductors and cannot pass through electrical insulators.
Know that a battery contains stored electricity that can be used to power products.
Know that an electrical circuit must be complete for electricity to flow.
Know that a switch can be used to complete and break a circuit.

Mechanical Systems
Understand that a mechanical system can allow us to move something more easily.
Know that mechanical systems have more than one mechanism that moves to make them work.
Know that all moving things have kinetic energy.

Digital World
Understand what variables are in programming.
Know that an algorithm is a set of instructions to be followed by the computer.
Know to check codes for errors (bugs).

GOLCAR GOALS – YEAR 5

Cooking and Nutrition
Understand where meat comes from – that beef is from cattle and how beef is reared and processed.
Know that recipes can be adapted to suit nutritional needs and dietary requirements.
Know that nutritional information is found on food packaging.
Understand what cross-contamination means and ways that it can be avoided.

Electrical Systems
Know that when there is a break in a series circuit, all components turn off.
Know that an electric motor converts electrical energy into rotational movement, causing the motor's axle to spin.
Know a motorised product is one which uses a motor to function.

Mechanical Systems
Know that mechanisms control movement.
Understand that mechanisms can be used to change one kind of motion into another.
Know that an input is the motion used to start a mechanism and an output is the motion that happens as a result.

Digital World
Know that a device means equipment created for a certain purpose or job and that monitoring devices observe and record.
Know that a sensor is a tool or device that is designed to monitor, detect and respond to changes for a purpose.

GOLCAR GOALS – YEAR 6

Cooking and Nutrition
Be able to follow a recipe, including using the correct quantities of each ingredient.
Be able to write a recipe, explaining the key steps, method and ingredients.
Understand what happens to a certain food before it appears on the supermarket shelf (farm to fork).
Have an understanding of the combinations of food that will compliment each other.

Structures
Know that structures can be strengthened by manipulating materials and shapes.

Electrical Systems
Know that batteries contain acid, which can be dangerous if they leak.
Know the names of the components in a basic series circuit, including a buzzer.

Textiles
Know that a template (or clothing pattern) helps to accurately mark out a design on fabric.
Know different decorative stitches and can sew them of a consistent size.

Digital World
Understand that sensors can be useful in products as they mean the product can function without human input.
Know that accelerometers can detect movement.

EYFS – KEY VOCABULARY

EYFS Reception

Food: Soup

- Fruit
- Vegetables
- Safety
- Knife
- Blade
- Tool
- Edge
- Handle
- Chop
- Slice
- Cut
- Saucepan
- Blender
- Chopping board
- Hob
- Boil
- Blend
- Mix
- Packaging
- Recyclable
- Metal
- Plastic
- Reusable

Structures: Junk modelling

- Join
- Stick
- Cut
- Bend
- Slot
- Scissors
- Measure
- Materials
- Fix

Textiles: Bookmarks

- Thread
- Weave
- Pattern
- Sew
- Sewing needle
- Embroider
- Design
- Evaluate

Structures: Boats

- Waterproof
- Absorb
- Prediction
- Variable
- Experiment
- Investigation
- Float
- Sink
- Junk

YEAR 1 – KEY VOCABULARY

Design and technology vocabulary

KS1 | Year 1

Mechanisms: Making a moving story book

- Assemble
- Design
- Evaluation
- Mechanism
- Model
- Sliders
- Stencil
- Target audience
- Template
- Test

Structures: Constructing a windmill

- Base
- Centre
- Design
- Equal
- Evaluate
- Middle
- Rotate
- Rotor
- Rotor Blades
- Sails
- Same
- Stable
- Strong
- Structure
- Test
- Weak
- Wind
- Windmill

Textiles: Puppets

- Decorate
- Design
- Fabric
- Glue
- Model
- Hand puppet
- Safety pin
- Staple
- Stencil
- Template

Mechanisms: Wheels and axles

- Axle
- Axle holder
- Chassis
- Design
- Evaluation
- Fix
- Mechanic
- Mechanism
- Model
- Test
- Wheel

Cooking and nutrition: Smoothies

- Blender
- Fruit
- Healthy
- Ingredients
- Recipe
- Smoothie
- Vegetable
- Seed
- Root
- Leaf
- Stem
- Flavour
- Design
- Cut
- Juice
- Table knife
- Juicer
- Plant
- Bush
- Tree
- Vine
- Chopping board
- Fork
- Taste
- Select
- Blend
- Evaluate
- Compare

YEAR 2 – KEY VOCABULARY

Design and technology vocabulary

KS1 | Year 2

Cooking and nutrition: Balanced diet

- Appearance
- Balanced
- Carbohydrates
- Combination
- Dairy
- Design
- Design brief
- Diet
- Feel
- Grate
- Grater
- Menu
- Oils
- Prepare
- Proteins
- Review
- Scissors
- Smell
- Snip
- Spread
- Spreads

Mechanisms: Making a moving monster

- Evaluation
- Input
- Lever
- Linear motion
- Linkage
- Mechanical
- Mechanism
- Motion
- Oscillating motion
- Output
- Pivot
- Reciprocating motion
- Rotary motion
- Survey

Structures: Baby bear's chair

- Function
- Man-made
- Mould
- Natural
- Stable
- Stiff
- Strong
- Structure
- Test
- Weak

Textiles: Pouches

- Accurate
- Fabric
- Knot
- Pouch
- Running-stitch
- Sew
- Shape
- Stencil
- Template
- Thimble

Mechanisms: Fairground wheel

- Design brief
- Design criteria
- Evaluate
- Frame
- Model
- Opinion
- Rotate
- Survey

YEAR 3 – KEY VOCABULARY

Design and technology vocabulary

KS2 | Year 3

Cooking and nutrition: Eating seasonally

- Arid
- Climate
- Complementary
- Country
- Export
- Import
- Mediterranean
- Mock-up
- Mountain
- Peel
- Polar
- Seasonal
- Seasons
- Snip
- Temperate
- Texture
- Tropical
- Weather

Structures: Constructing a castle

- 2D shapes
- 3D shapes
- Castle
- Design criteria
- Evaluate
- Facade
- Feature
- Flag
- Net
- Recyclable
- Scoring
- Stable
- Strong
- Structure
- Tab
- Weak

Textiles: Cushions / Egyptian collars

- Accurate
- Applique
- Cross-stitch
- Cushion
- Decorate
- Detail
- Fabric
- Patch
- Running-stitch
- Seam
- Stencil
- Stuffing
- Target audience
- Target customer
- Template

YEAR 3 – KEY VOCABULARY

Electrical systems: Electric poster

- Battery
- Bulb
- Circuit
- Circuit component
- Crocodile wires
- Electrical product
- Electrical system
- Final design
- Information design
- Initial ideas
- Peer assessment
- Research
- Self assessment
- Sketch

Mechanical systems: Pneumatic toys

- Exploded-diagram
- Function
- Input
- Lever
- Linkage
- Mechanism
- Motion
- Net
- Output
- Pivot
- Pneumatic system
- Thumbnail sketch

Digital world: Wearable technology

- Analogue
- Analyse
- Annotate
- Badge
- CAD
- Control
- Design criteria
- Develop
- Digital
- Digital revolution
- Digital world
- Display
- Electronic
- Fastening
- Feature
- Feedback
- Form
- Function
- Initiate
- Layers
- Loops
- Micro:bit
- Monitor
- Net
- Point of sale
- Product
- Product concept
- Program
- Sense
- Simulator
- Smart
- Technology
- Test
- User

YEAR 4 – KEY VOCABULARY

Design and technology vocabulary

KS2 | Year 4

Structures: Pavilions

- Aesthetic
- Cladding
- Design criteria
- Evaluation
- Frame structure
- Function
- Inspiration
- Pavilion
- Reinforce
- Stable
- Structure
- Target audience
- Target customer
- Texture
- Theme

Cooking and nutrition: Adapting a recipe

- Adapt
- Addition
- Budget
- Buttery
- Combine
- Comment
- Construct
- Cream
- Crunchy
- Cuboid
- Fold
- Hygiene
- Layout
- Market research
- Modify
- Multiplication
- Opinion
- Pounds
- Sieve
- Sift
- Target audience
- Texture
- Unique
- Wooden spoon

Textiles: Fastenings

- Aesthetic
- Assemble
- Book sleeve
- Design criteria
- Evaluation
- Fabric
- Fastening
- Mock-up
- Net
- Running-stitch
- Stencil
- Target audience
- Target customer
- Template

Electrical systems: Torches

- Battery
- Bulb
- Buzzer
- Cell
- Component
- Conductor
- Copper
- Design criteria
- Electrical item
- Electricity
- Electronic item
- Function
- Insulator
- Series circuit
- Switch
- Test
- Torch
- Wire

YEAR 4 – KEY VOCABULARY

Mechanical systems option 1 Mechanical cars	Mechanical systems option 2: Making a slingshot car	Digital world: Mindful moments timer
• Bearing • Chassis • Force • Machine • Mechanism • Prototype • Target audience	• Aesthetic • Air resistance • Chassis • Design • Design criteria • Function • Graphics • Kinetic energy • Mechanism • Net • Structure	• Advantage • Annotate • Assemble • Aesthetic • Block • Brand identity • Brand • Bug • CAD • Clipart • Coding • Criteria • Debug • Design • Develop • Disadvantage • Display • Ergonomic • Evaluate • Exhibition • Feedback • Form • Function • Join • Logo • Loop • Mindfulness • Model • Net • Product • Program • Prototype • Research • Script • Sketchpad • Test • Timer • User • Variable

YEAR 5 – KEY VOCABULARY

Design and technology vocabulary

KS2 | Year 5

Cooking and nutrition: Developing a recipe

- Abattoir
- Adaptation
- Balanced
- Beef
- Brand
- Cook
- Cross-contamination
- Develop
- Enhance
- Equipment
- Farm
- Label
- Measure
- Nutrient
- Nutrition
- Nutritional value
- Preference
- Press
- Process
- Safety
- Theme

Mechanical systems option 2: Making a pop-up book

- Aesthetic
- Computer-aided design (CAD)
- Caption
- Design
- Design brief
- Design criteria
- Exploded-diagram
- Function
- Input
- Linkage
- Mechanism
- Motion
- Output
- Pivot
- Prototype
- Slider
- Structure
- Template

YEAR 5 – KEY VOCABULARY

Electrical systems:
Doodlers

- Circuit component
- Configuration
- Current
- Develop
- DIY
- Investigate
- Motor
- Motorised
- Problem solve
- Product analysis
- Series circuit
- Stable
- Target user

YEAR 5 – KEY VOCABULARY

Digital world:
Monitoring devices

- Alert
- Ambient
- Boolean
- Consumables
- Decompose
- Development
- Device
- Duplicate
- Durable
- Electronic
- Inventor
- Lightweight
- Man-made
- Manipulate
- Manoeuvre
- Microplastics
- Model
- Monitor
- Monitoring device
- Moulded
- Plastic
- Plastic pollution
- Programming comment
- Programming loop
- Reformed
- Replica
- Research
- Sensor
- Strong
- Sustainability
- Synthetic
- Thermometer
- Thermoscope
- Value
- Variable
- Versatile
- Water-resistant
- Workplane

YEAR 6 – KEY VOCABULARY

Design and technology vocabulary

KS2 | Year 6

Cooking and nutrition: Come dine with me

- Balance
- Bitter
- Bridge method
- Complement
- Cookbook
- Farm to fork
- Method
- Nationality
- Reared
- Research
- Pairing
- Preparation
- Salty
- Sour
- Storyboard
- Sweet
- Umami

YEAR 6 – KEY VOCABULARY

Textiles: Waistcoats

- Accurate
- Adapt
- Annotate
- Design
- Design criteria
- Detail
- Fabric
- Fastening
- Knot
- Properties
- Running-stitch
- Seam
- Sew
- Shape
- Target audience
- Target customer
- Template
- Thread
- Unique
- Waistcoat
- Waterproof

Electrical systems: Steady hand game

- Assemble
- Battery
- Battery pack
- Benefit
- Bulb
- Bulb holder
- Buzzer
- Circuit
- Circuit symbol
- Component
- Conductor
- Copper
- Design
- Design criteria
- Evaluation
- Fine motor skills
- Fit for purpose
- Form
- Function
- Gross motor skills
- Insulator
- LED
- User

YEAR 6 – KEY VOCABULARY

Structures: Playgrounds

- Adapt
- Apparatus
- Bench hook
- Cladding
- Coping saw
- Design
- Dowel
- Evaluation
- Feedback
- Idea
- Jelutong
- Landscape
- Mark out
- Measure
- Modify
- Natural materials
- Plan view
- Playground
- Prototype
- Reinforce
- Sketch
- Strong
- Structure
- Tenon saw
- Texture
- User
- Vice
- Weak

Digital world: Navigating the world

- 3D CAD
- Application (apps)
- Biodegradable
- Boolean
- Cardinal compass
- Client
- Compass
- Concept
- Convince
- Corrode
- Duplicate
- Environmentally friendly
- Equipment
- Feature
- Finite
- Function
- Functional
- GPS tracker
- If statement
- Infinite
- Investment
- Lightweight
- Loop
- Manufacture
- Materials (wood, metal, plastic etc.)
- Mouldable
- Navigation
- Non-recyclable
- Product lifecycle
- Product lifespan
- Program
- Recyclable
- Smart
- Sustainable
- Sustainable design
- Unsustainable design
- Variable
- Workplane

IMPACT MEASURES

We know learning has been successful in this subject area because:

- Pupils demonstrate a clear progression in their design and technological skills, reflected in their ability to independently plan, create, and critique their projects.
- High levels of pupil engagement in D&T lessons are evident, with pupils showing enthusiasm and motivation. Feedback indicates that pupils enjoy learning through practical applications, and many express aspirations to pursue D&T in secondary education.
- Pupils are able to articulate the links between D&T and other subjects, showing an understanding of how design and technology informs and enhances their learning in other areas such as science and mathematics.
- Pupils demonstrate awareness of sustainability in their design choices, fostering a sense of responsibility for environmental impact.

By adhering to these practices, we aspire to uphold an outstanding standard of Design and Technology education that fully prepares our pupils for the future, nurturing them as innovative thinkers and responsible citizens.