

Project on a Page

Freestanding Structures

Topic: Castles
DT Discipline: Structures



Purpose:

To create a freestanding castle using a variety of materials and joins.

Intended users:

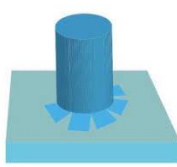
The castle tower could be used by other children in small world play.

The castle could be used for role play for children in the class.

Links to topics:

Science – Properties of materials

Humanities – Castles, Sneinton



Related learning:

Maths: Measurement (length and height)

Maths: Shape (2D and 3D shapes)

Science: Properties of materials

Writing: Organisation of work, explanations, instructions. New vocabulary.

Art: Painting and design.

Resources:

paper, card, plastic sheet, paper and plastic straws, pipe cleaners reclaimed materials including small containers, card boxes, cotton reels string, masking tape PVA glue, Plasticine, left/right handed scissors, hole punch, stapler

Vocabulary: structure, wall, tower, framework, weak, strong, base, top, underneath, side, edge, surface, thinner, thicker, corner, point, straight, curved metal, wood, plastic, circle, triangle, square, rectangle, cuboid, cube, cylinder design, make, evaluate, user, purpose, ideas, design criteria, product, function

Design:

- Go on a walk around school/local area. Look at the structures (buildings, playground equipment, bridges etc.). Think about how the structures are made and what makes them stable.
- Look at pictures of castles and discuss how they are built and made. How can they link this to what they already know about castle structures?
- Ask the children to draw/make a structure (using blocks or Lego) they have found and add labels including materials used and shapes they can see (e.g. wall, tower, bridge, plastic, metal)

Make:

- Practice making cuts and joins in card using different equipment.
- Practice folds and adding layers of materials to make the structure stronger.
- Plan by suggesting what to do next.
- Select and use tools, skills and techniques, explaining their choices.
- Select new and reclaimed materials and construction kits to build their structures.
- Use simple finishing techniques suitable for the structure they are creating.

Evaluate:

- Does the product use for its intended purpose? Can other children play small world games or use it to role play?
- Evaluate design and making process against design criteria. Did the product meet the design? How could it be changed or improved?

Prior learning:

EYFS:

- Using blocks to develop spatial awareness
- Using small and large apparatus
- Develop fine motor skills using a range of equipment (pencils, paintbrushes, scissors, hole punch, cutlery)
- Working collaboratively to share ideas.

Ways to Assess Learning:

- Do they know how to use appropriate equipment and utensils to cut and join?
- Do they know about properties of different materials?
- Do they know how to use relevant technical and sensory vocabulary?

Scaffold and Stretch:

Scaffold: Instruction cards, sentence starters for design and evaluate, modified utensils and/or support to use utensils.

Stretch: Give additional design brief, write instructions, provide description of structure using technical vocabulary

Project on a Page

Preparing fruit and vegetables

Topic: Sierra Leone

DT Discipline: Food and Nutrition



Purpose:

To create a fruit salad using fruit typically found in Sierra Leone or area with climate similar to Sierra Leone.

Intended users:

The salad could be shared with family, peers or friends at a tasting event at school.

Links to topics:

Science – Living things and their habitat, plants

Humanities – Sierra Leone

PSHE – Healthy Me

Related learning:

Maths: Measurement (weight and capacity)

Maths: Statistics

Science: Plants and growing

Writing: Organisation of work, explanations, instructions. New vocabulary.



Resources: range of fresh fruit and vegetables
chopping boards, knives, peelers, graters, skewers, juicers, spoons, jugs, plates, bowls, aprons, plastic table covers, hand washing and washing-up facilities

Vocabulary: fruit and vegetable names, names of equipment and utensils, sensory vocabulary e.g. soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients, planning, investigating tasting,

Design:

- Examine and taste a range of fruit found in Sierra Leone (dates, figs, banana, kiwi, soursop, mango, papaya, pineapple). Combine these to work out tasting combinations – what do they prefer?
- Find out how ingredients are grown and sourced.
- Develop design criteria including appearance, taste, texture and smell for an appealing product and purpose.
- Use a range of ways to communicate ideas – sketches, labelling, computer design.

Make:

- Plan the main stages of a recipe, including utensils, ingredients and equipment – writing ingredients list, instructions and utensils list.
- Select appropriate ingredients to meet the design criteria. How will these be chosen? As a class, in groups or individually? How will the ingredients be sourced?
- Select appropriate equipment to combine ingredients. Do they know how to select appropriate utensils?
- Ensure safe use of utensils. Has a risk assessment been carried out?

Evaluate:

- Carry out and record sensory evaluations (Ask peers, friends and family to try product and ask for feedback).
- Evaluate design and making process against design criteria. Did the product meet the design? How could it be changed or improved?

Prior learning:

EYFS:

- Experience of common fruit and vegetables, undertaking sensory activities i.e. appearance taste and smell.
- Experience of cutting soft fruit and vegetables using appropriate utensils.

Ways to Assess Learning:

- Do they know how to use appropriate equipment and utensils to prepare food?
- Do they know about a range of fresh and processed ingredients and where they come from?
- Do they know how to use relevant technical and sensory vocabulary?

Scaffold and Stretch:

Scaffold: Recipe cards, sentence starters for design and evaluate, modified utensils and/or support to use utensils.

Stretch: Give additional design brief, write instructions, create an advert for their fruit salad, write a description of the salad

Project on a Page Sliders and Levers

Topic: The Great Fire of London
DT Discipline: Mechanisms



Purpose:

To create pop-up or moving parts book about the Great Fire of London.

Intended users:

The children in the class, friends, peers.

Links to topics:

Science – Properties of materials
Humanities – Great Fire of London.

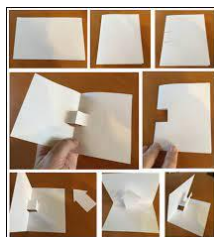
Related learning:

Maths: Measurement (length and height)

Maths: Shape (2D and 3D shapes)

Science: Properties of materials

Writing: Organisation of work, explanations, instructions. New vocabulary.



Resources: card strips, card rectangles, paper, masking tape, paper fasteners, paper binders, stick glue, PVA glue, finishing materials and media

Vocabulary: slider, lever, pivot, slot, bridge/guide card, masking tape, paper fastener, join pull, push, up, down, straight, curve, forwards, backwards design, make, evaluate, user, purpose, ideas, design criteria, product, function

Design:

- Explore a range of pop-up and moving-parts books, asking questions and noticing how the parts move.
- Discuss what materials are used, how they can make parts move and introduce new vocabulary.
- Create a design brief, including a labelled drawing of their design. Can they use new vocabulary to label their design accurately?

Make:

- Plan by suggesting what to do next.
- Select and use tools, explaining their choices, to cut, shape and join paper and card.
- Use simple finishing techniques suitable for the product they are creating.

Evaluate:

- Ask children to evaluate their finished product, communicating how it works and how it matches their design criteria, including any changes they made.
- Ask for peers evaluations of their product. Do they like it? What would they change?

Prior learning:

EYFS & Year 1:

- Early experiences of working with paper and card to make simple flaps and hinges.
- Experience of simple cutting, shaping and joining skills using scissors, glue, paper fasteners and masking tape.

Ways to Assess Learning:

- Do they know how to use appropriate equipment and utensils to cut and join?
- Do they know about properties of different materials?
- Can they explain how the moving parts work?
- Do they know how to use relevant technical and sensory vocabulary?

Scaffold and Stretch:

Scaffold: Instruction cards, sentence starters for design and evaluate, modified utensils and/or support to use utensils.

Stretch: Give additional design brief, write instructions, provide description of structure using technical vocabulary, create an advert for their book using iPad

Project on a Page

Templates and joining

Topic: Oceans
DT Discipline: Textiles



Purpose:

To create a reusable bag for life to be used instead of plastic bags.

Intended users:

The bags could be made for friends, family, peers or the maker.

Links to topics:

Science – Properties of materials

Humanities – Oceans

Related learning:

Maths: Measurement (length and height)

Maths: Shape (2D and 3D shapes)

Science: Properties of materials

Writing: Organisation of work, explanations, instructions. New vocabulary.

Art: Painting and design.



Resources: variety of textiles e.g. dipryl, felt, reclaimed fabric thread, pins, needles, magnet, staplers, staples, fabric glue left/right handed scissors, buttons, wool, fabric paints, drawing and colouring media

Vocabulary: names of existing products, joining and finishing techniques, tools, fabrics and components template, pattern pieces, mark out, join, decorate, finish features, suitable, quality mock-up, design brief, design criteria, make, evaluate, user, purpose, function

Design:

- Explore a range of fabric bags, focusing on the shapes, how it is joined and suitability of fabric.
- Practice making templates for bags using paper and glue or tape.
- Practice basic stitch types (running stitch, blanket stitch).
- Create a design brief, including a labelled drawing of their design. Can they include artistic design of their vehicle too?

Make:

- Select from and use a range of tools and equipment to perform practical tasks such as marking out, cutting, joining and finishing.
- Select from and use textiles according to their characteristics.
- Discuss the stages of making to ensure product meets design criteria.

Evaluate:

- Ask children to evaluate their finished product, communicating how it works and how it matches their design criteria, including any changes they made.
- Is the bag useable 'for life'?

Prior learning:

EYFS:

- Explored and used different fabrics.
- Cut and joined fabrics with simple techniques.
- Thought about the user and purpose of products

Ways to Assess Learning:

- Do they know how to use appropriate equipment and utensils to cut and join?
- Do they know about properties of different materials?
- Do they know how to use relevant technical and sensory vocabulary?

Scaffold and Stretch:

Scaffold: Instruction cards, sentence starters for design and evaluate, modified utensils and/or support to use utensils.

Stretch: Give additional design brief, write instructions, provide description of structure using technical vocabulary

Project on a Page

Wheels and axles

Topic: Sneinton
DT Discipline: Mechanisms



Purpose:

To create a vehicle that can be used to show a teddy or toy around Sneinton.

Intended users:

The children in the class to show a teddy or toy around the local area of school.

Links to topics:

Science – Properties of materials

Humanities – Sneinton

Related learning:

Maths: Measurement (length and height)

Maths: Shape (2D and 3D shapes)

Science: Properties of materials

Writing: Organisation of work, explanations, instructions. New vocabulary.

Art: Painting and design.



Resources: card, cotton reels, plastic tubing, dowel, straws, card discs, MDF wheels single hole punch, card drill, cutting mat, masking tape, PVA glue, junior hacksaw, vice, left/right handed scissors

Vocabulary: vehicle, wheel, axle, axle holder, body, assembling, cutting, joining, shaping, finishing, fixed, free, moving, mechanism names of tools, equipment and materials used design, make, evaluate, purpose, user, criteria, functional

Design:

- Explore a range of wheeled products, asking questions and noticing how the wheels are fixed on.
- Notice how wheels are used in daily life – cars, trolleys, roller-skates
- Create a design brief, including a labelled drawing of their design. Can they include artistic design of their vehicle too?

Make:

- Select from and use a range of tools and equipment to perform practical tasks such as cutting and joining to allow movement and finishing.
- Select from and use a range of materials and components such as paper, card, plastic and wood according to their characteristics.
- Practice supervised use of a hacksaw and attaching dowel.

Evaluate:

- Ask children to evaluate their finished product, communicating how it works and how it matches their design criteria, including any changes they made.
- Could they use their design to transport a toy around Sneinton? Do they like the design or not?

Prior learning:

EYFS:

- Assembled vehicles with moving wheels using construction kits.
- Explore moving vehicles through play.
- Gained some experience of designing, making and evaluating products for a specified user and purpose.
- Developed some cutting, joining and finishing skills with card.

Ways to Assess Learning:

- Do they know how to use appropriate equipment and utensils to cut and join?
- Do they know about properties of different materials?
- Do they know how to use relevant technical and sensory vocabulary?

Scaffold and Stretch:

Scaffold: Instruction cards, sentence starters for design and evaluate, modified utensils and/or support to use utensils.

Stretch: Give additional design brief, write instructions, provide description of structure using technical vocabulary

Project on a Page

2D Shapes to 3D Structures

Topic: Vikings and Anglo-Saxons

DT Discipline: Textiles



Purpose:

To make a purse/wallet for a Viking.

To be able use different sewing techniques and fastening types to join fabric to make a purse or wallet.

Intended users:

Robin Redbeard – a Viking who needs to keep his money safe.

Links to topics:

Humanities – What was life like in Viking Britain? Craft workers and trading.

Maths – Measurement (length and height)



Related learning:

Science: Properties of materials

Maths: Measurement (length and height)

History: Investigating materials and textiles of a time period

Resources:

Fabric, thread, needles, pins, zips, buttons, purses and wallets, paper, measuring tape, fabric glue, tape, left/right handed scissors, needles, thread, tape, fabric glue, pins, measuring tape e.g. fabric paints, threads, appliqué pieces

Vocabulary: fabric, names of fabrics, fastening, compartment, zip, button, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance user, purpose, design, model, evaluate, prototype, annotated sketch, functional, innovative, investigate, label,

Design:

- Research and investigate existing purses and wallets and notice different joins and openings (zips, buttons, poppers). Think about the historical period – what fabrics and fastenings would be available?
- Develop design criteria including appearance, finish, stitch type, material and fastening type.
- Use a range of ways to communicate ideas – sketches, labelling, computer design.

Make:

- Plan the main stages of making, including making a paper pattern and practicing stitches.
- Select appropriate tools to meet the design criteria. Are they aware of what tools and equipment are required?
- Select appropriate materials to meet design criteria. Are suitable fabrics available?
- Ensure safe use of tools and equipment. Has a risk assessment been carried out?

Evaluate:

- Carry out and record sensory evaluations (Ask peers, friends and family to use product and ask for feedback).
- Evaluate design and making process against design criteria. Did the product meet the design? How could it be changed or improved?

Prior learning:

Year 2:

- Understand properties of different materials
- Cutting and joining fabric using basic techniques (run stitch, glue, staple)
- Some understanding of finishing techniques (buttons, fabric paint)
- Using oracy to discuss intended user, steps to make product
- Using a pattern to aid with sewing

Ways to Assess Learning:

- Can they use a sewing pattern as a guide?
- Do they know how to use appropriate equipment to join materials?
- Can they experiment with different stitch types?
- Do they know how to use relevant technical and sensory vocabulary?
- Can they test their product against criteria?

Scaffold and Stretch:

Scaffold: Instruction cards, sentence starters for design and evaluate, modified utensils and/or support to use utensils – large needles, video instructions given to demonstrate stitch types.

Stretch: Give additional design brief, write instructions, advertise the soup using Keynote or other app, create video instructing someone on different stitch types.

Project on a Page

Materials and Structures

Topic: Rainforests

DT Discipline: Materials and Structures



Purpose:

To make a container/gift box/plant pot using recyclable materials.
To make a soup or stew that would provide nutrients for a Stone Age human.

Intended users:

The product could be used by pupils, friends or family. It could be given as an Easter gift box or used as a plant pot for Y3 Science topic.

Links to topics:

Maths – 2D and 3D Shapes, Measurement (length and height)
Humanities – How to help save the rainforest.

Related learning:

Maths: Measurement (length and height)
Maths: Shapes (3D Shapes)
Writing: Organisation of work, explanations, instructions, labelling.
New vocabulary.



Resources:

Recyclable materials (cardboard, plastic bottles, plastic bags, magazines), craft knife, cutting board, ruler, safety ruler, scissors, tape, glue

Design:

- Investigate different shell structures, including packaging. Can they identify how the structure was put together?
- Develop design criteria based on the purpose and audience. What do they need to include to make the product successful?
- Based on intended use, design the graphics of the structure through drawing or CAD.
- Use a range of ways to communicate ideas – sketches, labelling, computer design.

Make:

- Plan the main stages of making the structure, including using appropriate equipment to measure, cut, score and assemble - writing equipment list, instructions and utensils list.
- Select appropriate materials to build structure. Can they find ways to strengthen their structure?
- Select appropriate methods to make their product look appealing. What methods will they use? Will they draw, use different materials or use computer graphics?
- Ensure safe use of equipment. Has a risk assessment been carried out?

Evaluate:

- Carry out and record evaluations against other similar products.
- Ask for peer evaluations.
- Evaluate design and making process against design criteria. Did the product meet the design? How could it be changed or improved?

Prior learning:

Year 1:

- Know some materials that would be suitable or unsuitable to build a structure.
- Have some basic knowledge and understanding of materials and how to join them.
- Have used some equipment and utensils, such as scissors and rulers.

Ways to Assess Learning:

- Do they know how to use appropriate equipment to cut and join materials?
- Do they understand that flat shapes can become 3D when joined?
- Do they know how to use relevant technical and sensory vocabulary?

Scaffold and Stretch:

Scaffold: Instruction cards, sentence starters for design and evaluate, modified utensils and/or support to use utensils, polydron for 3D shapes
Stretch: Give additional design brief – a lid, a stand, write instructions, advertise the container using Keynote or other app.

Project on a Page

Healthy and Varied Diet

Topic: Stone Age
DT Discipline: Food and Nutrition



Purpose:

To make a soup or stew using 'paleo' ingredients.

To make a soup or stew that would provide nutrients for a Stone Age human.

Intended users:

The soup could be tried by the pupils, or their parents could be invited in for a tasting as part of a Stone Age day.

Links to topics:

Science – Animals including Humans

Humanities – Stone Age farming

Related learning:

Maths: Measurement (weight and capacity)

Maths: Statistics (evaluation)

Science: Animals including humans

Writing: Organisation of work, explanations, instructions. New vocabulary.

Resources:

Recipe ingredients, knives, chopping boards, peelers, counter top induction hob, slow cooker, mixing bowl, wooden spoon, bowls or cups, spoons



Design:

- Research existing soups and stews, asking questions about nutritional content. Taste test to identify preferences.
- Find out how different ingredients are grown and sourced.
- Develop design criteria including appearance, taste, texture and smell for an appealing product and purpose.
- Use a range of ways to communicate ideas – sketches, labelling, computer design.

Make:

- Plan the main stages of a recipe, including utensils, ingredients and equipment – writing ingredients list, instructions and utensils list.
- Select appropriate ingredients to meet the design criteria. How will these be chosen? As a class, in groups or individually? How will the ingredients be sourced?
- Select appropriate equipment to combine ingredients. Do they know how to select appropriate utensils?
- Ensure safe use of utensils. Has a risk assessment been carried out?

Evaluate:

- Carry out and record sensory evaluations (Ask peers, friends and family to try product and ask for feedback).
- Evaluate design and making process against design criteria. Did the product meet the design? How could it be changed or improved?

Prior learning:

Year 2:

- Know some ways to prepare ingredients safely and hygienically.
- Have some basic knowledge and understanding about healthy eating and the eat-well plate.
- Have used some equipment and utensils and prepared and combined ingredients to make a product.

Ways to Assess Learning:

- Do they know how to use appropriate equipment and utensils to prepare food?
- Do they know about a range of fresh and processed ingredients and where they come from?
- Do they know how to use relevant technical and sensory vocabulary?

Scaffold and Stretch:

Scaffold: Recipe cards, sentence starters for design and evaluate, modified utensils and/or support to use utensils.

Stretch: Give additional design brief, write the recipe, provide description of meal, advertise the soup using Keynote or other app.

Project on a Page

Levers and Linkages

Topic: Egyptians
DT Discipline: Mechanisms



Purpose:

To create a moving part information book about the Egyptians.

Intended users:

The book could be read by pupils, family, visitors to school.
The books could be put in the school library.

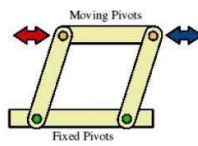
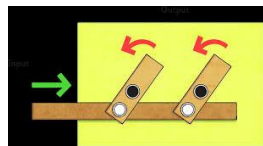
Links to topics:

Humanities – Life of an Egyptian

Related learning:

Maths: Position, direction and movement

English: Building vocabulary, writing instructions



Resources:

card strips, card rectangles, paper, masking tape, paper fasteners, paper binders, stick glue, left/right handed scissors, cutting mats, card drill, finishing media and materials

Vocabulary: mechanism, lever, linkage, pivot, slot, bridge, guide system, input, process, output linear, rotary, oscillating, reciprocating user, purpose, function prototype, design criteria, innovative, appealing, design brief

Design:

- Research and investigate existing books and products that use levers and linkages.
- Create annotated sketches and diagrams that demonstrate the intended movement.
- Develop design criteria through discussion and investigation. What is the purpose of the product? How do you want it to move? Will there be fixed pivots and loose pivots?
- Use a range of ways to communicate ideas – sketches, labelling, computer design.

Make:

- Plan the main stages of making, including making a
- Select appropriate tools that are appropriate to cut, shape and join paper and card.
- Select and use appropriate finishing tools and techniques to make their product visually pleasing to intended users.

Evaluate:

- Evaluate design and making process against design criteria. Did the product meet the design? How could it be changed or improved?
- Evaluate using opinions and thoughts of intended users.

Prior learning:

Year 1 and 2:

- Explored and used mechanisms such as flaps, sliders and levers.
- Gained experience of basic cutting, joining and finishing techniques with paper and card.

Ways to Assess Learning:

- Can they use different methods to join paper and card?
- Do they understand how the mechanism works?
- Can they use vocabulary to describe how the mechanism works?
- Do they know the main stages of making?

Scaffold and Stretch:

Scaffold: Instruction cards, sentence starters for design and evaluate, modified utensils and/or support to use utensils, video instructions demonstrating how levers and linkages work

Stretch: Give additional design brief, write instructions, create video instructing on how to make a lever or linkage

Project on a Page

Simple circuits and switches

Topic: Electrical Circuits
DT Discipline: Electrical Systems



Purpose:

To make a torch or light source using electrical circuits.

To make a casing for a torch.

Intended users:

The children will take the torch to Magna Science museum.

Links to topics:

Science – Electrical circuits

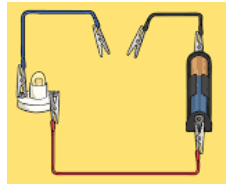
Related learning:

Maths: Measurement (weight and capacity)

Maths: Statistics (evaluation)

Science: Animals including humans

Writing: Organisation of work, explanations, instructions. New vocabulary.



Resources: switches including toggle, push-to-make and push-to-break aluminium foil, paper fasteners, paper clips, card, corrugated plastic, reclaimed materials, bulbs, bulb holders, batteries, battery holders, wire, automatic wire strippers

Vocabulary: series circuit, fault, connection, toggle switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, program, system, input device, purpose, function, prototype, design criteria, innovative, appealing, design brief

Design:

- Research existing products that have electrical circuits – How are they constructed? What kind of switch do they have?
- Pupils will need to construct a circuit (in Science) and use their prior knowledge to understand how to design a circuit with casing.
- Use CAD (TinkerCAD) to design their torch prior to making.

Make:

- Consider the main stages of making – building an electrical circuit, gathering materials for the casing of the torch. How will their materials be joined? What considerations do they need to make regarding ease of use, function and aesthetics?
- Pupils will need to select the correct equipment to build a circuit and build a casing. Do they know what materials they will be using? How well do they describe this?

Evaluate:

- Carry out and record sensory evaluations (Ask peers and friends to use product during trip to
- Evaluate design and making process against design criteria. Did the product meet the design? How could it be changed or improved? How did CAD help them to realise their design?

Prior learning:

- Constructed a simple series electrical circuit in science, using bulbs, switches and buzzers.
- Cut and joined a variety of construction materials, such as wood, card, plastic, reclaimed materials and glue.

Ways to Assess Learning:

- Do they know how to use appropriate equipment and utensils?
- Do they understand how to construct a circuit?
- Do they know how to use relevant technical and sensory vocabulary?

Scaffold and Stretch:

Scaffold: sentence starters for design and evaluate, modified utensils and/or support to use utensils, photo of circuits

Stretch: Give additional design brief, write instructions for circuit building, advertise the torch using Keynote or other app.

Project on a Page

Celebrating culture and seasonality

Topic: The Caribbean
DT Discipline: Food and Nutrition



Purpose:

To make a traditional Caribbean food – coco bread.

Intended users:

Year 5 pupils, peers and families.

Links to topics:

Humanities – The Caribbean

Related learning:

Maths: Measurement (weight and capacity)

Humanities: Jamaica's crops and farming

Writing: Organisation of work, explanations, instructions. New vocabulary.



Resources: information about food from around the world video clips of foods in the context of where they come from, food to taste, recipes to evaluate, weighing scales, measuring jugs, bowls, spoons – various sizes, baking trays, parchment paper, plastic film

Vocabulary: ingredients, yeast, dough, flour, wholemeal, unleavened, baking soda, spice, fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, dairy, allergy, intolerance, savoury, source, seasonality utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape

Design:

- Understand how key chefs have influenced eating habits to promote varied and healthy diets.
- Taste and evaluate a range of dishes for the Caribbean. This can include watching videos and observing pictures to promote sensory discussions.
- Explore a range of initial ideas, and make design decisions to develop a final product linked to user and purpose.
- Use words, annotated sketches and information and communication technology as appropriate to develop and communicate ideas.

Make:

- Select and use appropriate utensils and equipment accurately to measure and combine appropriate ingredients.
- Make, decorate and present the food product appropriately for the intended user and purpose.
- Write step-by-step instructions, including recipe, ingredients and utensils list.

Evaluate:

- Compare the final product to the original design specification.
- Carry out sensory evaluations (this could include friends and family) Record the evaluations using e.g. tables/graphs/charts such as star diagrams.

Prior learning:

Year 2 and Year 3

- Have knowledge and understanding about food hygiene, nutrition, healthy eating and a varied diet.
- Be able to use appropriate equipment and utensils, and apply a range of techniques for measuring out, preparing and combining ingredients.

Ways to Assess Learning:

- Do they know how to use appropriate equipment and utensils?
- Do they know key ingredients?
- Can they discuss the nutritional content of the product?
- Have they researched the significance of the dish for the culture it is from?

Scaffold and Stretch:

Scaffold: sentence starters for design and evaluate, modified utensils and/or support to use utensils, photos and videos of step-by-step instructions

Stretch: Give additional design brief, set budget, create video advert for coco bread,

Project on a Page

Combining fabric shapes

Topic: The Victorians
DT Discipline: Textiles



Purpose:

- To make a bag/satchel appropriate for a Victorian school child.
- To make a bag to be displayed in the Victorian exhibition.
- To make a bag to be used for Year 2 during their Victorians topic.

Intended users:

Year 2 pupils to use during role play in their Victorians topic (Autumn 2)

Links to topics:

Humanities – The Victorians

Related learning:

Maths: Measurement (length and height)
Maths: 2D and 3D shapes
Writing: Organisation of work, explanations, instructions. New vocabulary.



Resources: existing textile products, reclaimed and reusable fabrics, pins, needles, thread, measuring tape, left/right handed fabric scissors, iron transfer paper, range of fastenings, materials for insulating or strengthening e.g. bubble wrap, wadding, interfacing

Vocabulary: seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces name of textiles and fastenings used, pins, needles, thread, pinking shears, fastenings, iron transfer paper

Design:

- Set an authentic and meaningful design brief. Children generate ideas by carrying out research using e.g. surveys, interviews, questionnaires and the web.
- Develop, model and communicate ideas through talking, drawing, templates, mock-ups and prototypes and, where appropriate, computer-aided design.
- Design purposeful, functional, appealing products for the intended user that are fit for purpose based on a simple design specification

Make:

- Select from and use a range of tools and equipment to make products that are accurately assembled and well finished. Work within the constraints of time, resources and cost.
- Demonstrate understanding of sewing patterns and how they work to develop the final product.
- Use sewing skills to attach 2D fabric to make a 3D bag/satchel – what stitches do they know? Can they use trial and error to improve functionality.

Evaluate:

- Compare the final product to the original design specification.
- Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose.
- Consider the views of others to improve their work (questionnaires to Y2)

Prior learning:

Year 2 and Year 4

- Experience of basic stitching, joining textiles and finishing techniques.
- Experience of making and using simple pattern pieces.
- Knowledge of 2D shapes
- Experience and knowledge of stitch types

Ways to Assess Learning:

- Do they know how to use appropriate equipment and utensils?
- Do they know different stitch types?
- Can they use a 2D sewing pattern to create a 3D product?
- Do they know how to use relevant technical and sensory vocabulary?

Scaffold and Stretch:

Scaffold: sentence starters for design and evaluate, modified utensils and/or support to use utensils (large needles), videos demonstrating stitches
Stretch: Give additional design brief, set budget, write instructions for sewing, create video tutorial, advertise the bag using Keynote or other app.

Project on a Page

Frame Structures

Topic: WW2

DT Discipline: Materials and Structures



Purpose:

To make a safe air-raid shelter for civilians in WW2.

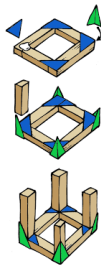
To design and make an improved air-raid shelter to protect a group of people from danger.

Intended users:

The pupils to assess if their air-raid shelter would survive a disaster.

Links to topics:

Humanities – WW2



Related learning:

Maths: Measurement (length and height)

Maths: 2D and 3D shapes

Humanities: Air-raid shelters

Writing: Organisation of work, explanations, instructions. New vocabulary.

Resources: card, paper straws, newspaper, square sectioned wood (dowel), masking tape, PVA glue pencils, rulers, right/left handed scissors, bench hooks, G-clamp, junior hacksaws, glass paper

Vocabulary: frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent design brief, design specification, prototype, annotated sketch, purpose, user, innovation, research, functional

Design:

- Set an authentic and meaningful design brief. Children generate ideas by carrying out research about historical and modern air-raid shelters – how could they improve the design of WW2 shelters to make them stronger/safer?
- Opportunity to investigate how to make frame structures stronger (3D shapes, tubing, pipe cleaners etc.)
- Use research and investigation to create design brief and detailed annotated design.

Make:

- Select from and use a range of tools and equipment to make products that are accurately assembled and well finished. Work within the constraints of time, resources and cost.
- Competently select from and use appropriate tools to accurately measure, mark out, cut, shape and join construction materials to make frameworks.
- Use finishing and decorative techniques suitable for the product they are designing and making.

Evaluate:

- Evaluations should be made through the design and making stages.
- Critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests.
- Did their structure survive the disaster? How could they have improved it?

Prior learning:

Year 1 and Year 3

- Experience of using measuring, marking out, cutting, joining, shaping and finishing techniques with construction materials.
- Basic understanding of what structures are and how they can be made stronger, stiffer and more stable.

Ways to Assess Learning:

- Do they know how to use appropriate equipment and utensils?
- What is their understanding about how to make structures stronger?
- Do they know how to use relevant technical and sensory vocabulary?

Scaffold and Stretch:

Scaffold: sentence starters for design and evaluate, modified utensils and/or support to use utensils

Stretch: Give additional design brief, set budget, advertise the bag using Keynote or other app, include a detailed step-by-step plan with tools and materials

Project on a Page

More complex switches

Topic: The Maya
DT Discipline: Electrical Circuits



Purpose:

To make security alarm for a Mayan artefact using a micro:bit circuit.

Intended users:

The pupils during their topic exhibition.

Links to topics:

Computing - Coding

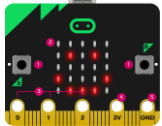
Related learning:

Maths: Measurement (length and height)

Maths: 2D and 3D shapes

Humanities: Mayan clay art

Writing: Organisation of work, explanations, instructions. New vocabulary.



Resources: micro:bits, light dependent resistors (LDRs), wire, automatic wire strippers, masking tape, construction materials and tools as required computer control software and interface boxes or standalone boxes, connecting leads

Vocabulary: series circuit, parallel circuit, names of switches and components, input device, output device, system, monitor, control, program, flowchart function, innovative, design specification, design brief, user, purpose

Design:

- Use research to develop a design specification for a functional product that responds automatically to changes in the environment. Take account of constraints including time, resources and cost.
- Generate and develop innovative ideas and share and clarify these through discussion.
- Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams.

Make:

- Formulate a step-by-step plan to guide making, listing tools, equipment, materials and components. Competently select and accurately assemble materials, and securely connect electrical components to produce a reliable, functional product.
- Create and modify a computer control program to enable an electrical product to work automatically in response to changes in the environment.

Evaluate:

- Continually evaluate and modify the working features of the product to match the initial design specification.
- Test the system to demonstrate its effectiveness for the intended user and purpose.
- Investigate famous inventors who developed ground-breaking electrical systems and components.

Prior learning:

Year 4:

- Understanding of the essential characteristics of a series circuit and experience of creating a battery-powered, functional, electrical product.
- Initial experience of using computer control software and an interface box or a standalone box, e.g. writing and modifying a program to make a light flash on and off.

Ways to Assess Learning:

- Do they know how to use appropriate equipment and utensils?
- What is their understanding about how to make structures stronger?
- Do they know how to use relevant technical and sensory vocabulary?
- Can they code a micro:bit?

Scaffold and Stretch:

Scaffold: sentence starters for design and evaluate, modified utensils and/or support to use utensils, coding instructions

Stretch: Give additional design brief, set budget, advertise the bag using Keynote or other app, include a detailed step-by-step plan with tools and materials

Project on a Page

Pulleys and gears

Topic: Earth and Space
DT Discipline: Mechanisms



Purpose:

To make a vehicle suitable to travel on different planets.

Intended users:

The pupils, friends, family.

Links to topics:

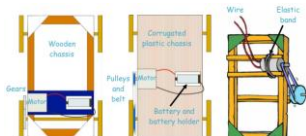
Science – Earth and Space, Forces

Related learning:

Maths: Measurement (length and height)

Maths: 2D and 3D shapes

Writing: Organisation of work, explanations, instructions. New vocabulary.



Resources: batteries, battery holders, wires, crocodile clips, motors, switches, aluminium foil, paper fasteners, paper clips, card, motors, motor stands, dowel, paper, elastic bands junior hacksaws, glass paper, G-clamps, bench hooks, glue, s masking tape, dowel, double-sided tape,

Vocabulary: pulley, drive belt, gear, rotation, spindle, driver, follower, ratio, transmit, axle, motor circuit, switch, circuit diagram annotated drawings, exploded diagrams mechanical system, electrical system, input, process, functionality, innovation, authentic, user, purpose, design specification, design brief

Design:

- Set an authentic and meaningful design brief. Children generate ideas by carrying out research about current space vehicles – what do they include? What do they need?
- Opportunity to investigate motor-powered toys and vehicles
- Use research and investigation to create detailed annotated design that includes drawing of intended circuit.

Make:

- Select from and use a range of tools and equipment to make products that are accurately assembled and well finished. Work within the constraints of time, resources and cost.
- Build a working circuit that includes a battery, switch and motor. Include cutting and stripping wires.
- Competently select from and use appropriate tools to accurately measure, mark out, cut, shape and join construction materials to make frameworks.

Evaluate:

- Evaluations should be made through the design and making stages.
- Critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests.
- Did their vehicle move around? What makes it appropriate for their intended users?

Prior learning:

Year 1 and Year 4

- Experience of axles, axle holders and wheels that are fixed or free moving.
- Basic understanding of electrical circuits, simple switches and components.
- Experience of cutting and joining techniques with a range of materials
- An understanding of how to strengthen and stiffen structures.

Ways to Assess Learning:

- Do they know how to use appropriate equipment and utensils ?
- What is their understanding about how to make a motor circuit?
- Do they know how to use relevant technical and sensory vocabulary?

Scaffold and Stretch:

Scaffold: sentence starters for design and evaluate, modified utensils and/or support to use utensils

Stretch: Give additional design brief, set budget, news report using Keynote or other app, include a detailed step-by-step plan with tools and materials